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THE BRITISH-AMERICAN-CANADIAN SURGICAL MISSION TO THE U.S.S.R.*

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Montreal

THIS Surgical Mission remained three weeks in Moscow and its vicinity on the invitation of the Soviet authorities. During that time we were treated with every courtesy and consideration. The Commissar of Public Health introduced us to leaders in Soviet surgery, discussed problems of military surgery, and arranged for us to see those things which interested us most at the front as well as elsewhere. On each of these prearranged visits we found the surgeons themselves hospitable and most congenial.

During two years of war their casualties have reached staggering figures, approaching 6 million, and 70% of the injured are said to have been returned to the fighting line. They have lost many that were near and dear to them. Thirty million of their countrymen were, at the time of our visit, beyond the German lines in occupied territory. They have faced defeat and repeated evacuations which dislocated their laboratories and institutes.

Soviet war surgery is well organized, efficient, modern. Soviet medical education is likewise established on a sound and adequate basis. The discovery that the Red soldier is receiving such satisfactory surgical treatment is apparently as surprising to the general public as was the evidence of military efficiency on the part of the Red Army.

I believe also that there had been a feeling among the members of our medical profession that it was a pity the Russians were cut off from the advantage of knowing about our work. No doubt all of us in the Surgical Mission shared that feeling to some extent. However, while visiting some large hospitals close to the front line I suddenly began to appreciate that their surgeons felt the same way, but in the reverse direction. It seemed to them that it was a pity that we had been cut off from knowledge of their work during the time that they were developing war surgery among vast numbers of wounded, and when other allied nations were dealing with what they considered to be comparatively few casualties.

FRONT LINE AND OTHER HOSPITALS

The British-American-Canadian Surgical Mission was conducted on a two-day visit to front line hospitals in the Vyasma area of the Western Front by the two surgical chiefs of that front, Colonel S. J. Banaytis and Colonel Vorshavsky. We left Moscow in four automobiles, followed by a fifth to serve in case of trouble, which proved to be a wise precaution. For eight hours we motored through the forest over roads of decreasing excellence. At each crossroads or intersection we met guards, usually women of soldierly bearing, in uniform and with rifles slung over their backs, who signalled us forward with coloured flags.

The "Western Front", which lies west of Moscow, is at present the largest unit of the general front line, but the sub-divisions of the front as a whole are altered from time to time. Other areas are the Caucasus front, Veronezh front, Leningrad front, Archangel front, etc.

There is a separate medical organization for each of these fronts, but they are all subject to the executive direction of Lt.-General V. I.

* The members of the Mission were as follows: Surgeon Rear-Admiral Gordon Gordon-Taylor, Consulting Surgeon to the Royal Navy; Colonel Elliott Cutler, Chief Consultant in Surgery, E.T.O., U.S.A.; Mr. E. Rock Carling, Medical Research Council, London; Lt.-Colonel Loyal Davis, Committee on Medical Research, O.S.R.D., and National Research Council, Washington; Major-General D. C. Monro, Consulting Surgeon to the British Army; Mr. Reginald W. Watson-Jones, Civil Consultant in Orthopædic Surgery to the Royal Air Force; Professor Wilder Penfield, National Research Council of Canada.

Smirnov, who is Chief of the Military Medical Department of the Red Army, acting under the Commissariat of Defence, of which Marshal Stalin is Commissar. Thus, the hospitals of the Army Zone, whether at the front near the fighting line or farther in the rear, even in Moscow, are under the direction of Lt.-General Smirnov.

Another set of hospitals in Moscow and farther east interdigitate with these hospitals and are under the supervision of the Commissar for Public Health, Miterev. Many of what would be called base hospitals are thus under the Commissariat of Health. The interrelationship of the two hospital systems is close, as supplies for hospitals of the Army Zone come from the Commissariat of Health, and during times of rapid movement hospitals may be transferred from one supervision to the other.

The Chief Surgeon of the Red Army is Academician Lt.-General Burdenko. He directs the professional activity. There are consulting surgeons in charge of each front acting under him. Thus, Colonel Banaytis is his deputy in charge of the Western Front.

The wounded go, primarily, to regimental aid posts, next, to the first mobile hospitals, which are called Medical Sanitary Battalions or Sorting and Evacuation Hospitals. These are placed about 6 to 8 km. distant from the front. The first surgical operations of any sort may be carried out here, although, on occasion, mobile surgical units (Casualty Clearing Stations) may be sent forward where needed. About 30 kilometres from the front, the special hospitals are placed. These are also mobile.

The distribution of beds in hospitals of the Army Zone, not including the Commissariat of Public Health hospitals, was described to us by General Burdenko as follows:

	Beds at front	*Beds in rear*
General surgery	91.5%	83.0%
Divided into hospitals for: chest, limbs, abdomens, joints.		
Neurosurgery	2.9%	4.3%
Facio-maxillary	1.6%	3.1%
Ophthalmological	1.3%	2.0%
"Shell shock"	0.2%	0.1%
Amputations	0.9%	5.3%
Gynæcological	0.2%	..

Special Hospitals exist as follows: (1) hip-joint; (2) thigh; (3) knee; (4) thoraco-abdominal; (5) facio-maxillary; (6) neurosurgical; (7) shell shock; (8) eye; (9) ear, nose and throat; (10) urological; (11) medical-sick.

Soviet hospitals at the front are skilfully camouflaged, although detailed description will be omitted here for obvious reasons. On one occasion our automobile halted in what seemed an uninhabited place, although we were actually between two special hospitals on either side of the road. The presence of one of them was betrayed by the sound of an accordion. The red cross is no longer displayed, as the only attention the enemy seemed to pay to this symbol during the first year of the war was undesirable, to say the least.

The first line of hospitals (Sorting and Evacuation) and the second line of hospitals (Special Units) are mobile and built as close to the front as feasible. They may be "tented" or they may be "hutted". The latter are preferred because of danger of bombing. In any case, the actual construction is carried out by the staffs of the respective hospitals.

The large sorting and evacuation hospital which we visited (2,000 to 4,000 beds) had moved in here three months before our visit when the enemy was driven out of the region. The construction had been carried out by members of the hospital staff recruited in Moscow and consisting of 70 doctors, 200 nurses and 530 additional staff (total 800).

It was not entirely surprising to see the medical officers and other ranks prove that they could be good carpenters and artizans, but the versatility and strength of the women filled us with admiration. Well trained nursing sisters were to be seen in heavy boots or sandals and workman's trousers hammering, planing, digging and carrying with the rest. Later in the day, the same young women appeared in correct uniform on duty, and some of them in the evening in fancy dress, singing and doing folk dances, and also putting on dance turns to jazz that strongly resembled what might have been met with in a Broadway cabaret.

The huts were strongly built, of the type of construction seen in a Canadian lumber camp. Those of 42 metres length accommodated 200 or more casualties. Others, 50 metres in length, could accommodate up to 800 "lightly wounded" patients while they waited for onward transportation.

In any hospital that admits soldiers not previously hospitalized, there is established a washing station to which patients are sent after sorting. In general, these stations resemble that seen by us in one of the special tented hospitals.

The washing house was built of wood and contained three well heated rooms. In the first room all clothes are removed and vodka given. A rubberized bag is provided to cover dressings of extremities and the patients go into the next room where showers are provided for those able to stand and wooden tables for others. A barber shaves and cuts hair and nurses scrub patients thoroughly. In the third room complete new sets of clothes are given and the patients pass on out of the building.

In a Mobile Field Hospital for thoraco-abdominal injuries the dressing tent was 15 ft. x 30 ft., provided with well-screened windows, floor of wooden sections, well lighted with electricity from their own small petrol engine generator. Four tables were provided here, and a door at the back led into the operating tent, 15 x 15 ft., where there were two operating tables. The autoclave with wood burner was situated in a separate adjacent small tent. The blood bank was in a little cellar dug into the ground where a large cake of ice kept blood and serum cold.

In a similar tented special hospital, a Mobile Field Hospital for extremities, they had built a small house for plaster which was adjacent to their dressing tent. Lt.-Col. Kobtiv had constructed an excellent home-made plaster table, which included the principal features of a Hawley table. The room was whitewashed and there was a small x-ray apparatus (Phillips, British) in an adjacent room. The plasters were applied directly to the skin, except for a little padding over the wound. On the lower extremity a piece of rubber, properly shaped, was placed on the dorsum of the foot and pulled out after the plaster had set.

A Military Field Hospital, located in Moscow, received casualties largely by ambulance train. It corresponded to an Allied Base Hospital, except that it dealt only with injuries to chest, joints and extremities. It was not considered a base, however, as patients were to be evacuated when feasible. The commanding officer and 90% of the staff were women. These were 70 physicians, 49 nurses, a nurses' training school, and students from the 2nd Medical Institute.

In the admitting building was a room for chest cases, in which there was an outlet for oxygen and an oxygen mask by each bed. The masks were not of standard type but were cleverly improvised. Shock was treated here by blood transfusion and by the Stern technique of injection of potassium phosphate into the cisterna magna. The latter manœuvre they were carrying out, they said, on a tentative, experimental basis.

The active portion of the hospital was divided into rooms containing about 10 patients each. The beds here, as seen also elsewhere, were very narrow, about 2½ feet, provided with a flat single wire-netting spring and a mattress of 1 to 2 inches in thickness. There were plugs by each bed for radio ear phones.

As in the hospitals at the front, we were met on each corridor by an ambulatory patient wearing a red arm band. He came to attention and rapidly reported the number and type of patients present. Officers' wards were separated from those of the men as in other hospitals.

In a discussion of injuries of the head of the femur, Professor Leavitt, of that hospital, stated that conservative therapy of this condition had resulted in a mortality of 25%, amputation of the limb 20%, resection of the joint 36%, and arthrotomy 27.2%. Of the knee joint the average mortality was 4.2%, and the mortality after resection, 6.2%. The above resections had been done in many cases during the stage of acute infection, and the pathological collection of shattered joints was reviewed. There followed a lively debate as to the relative merits of arthrotomy and joint resection during acute infection.

Secondary suture of open wounds was carried out, usually about 12 days after injury. Of these operations, 85% were followed by healing *per primam*. They used no antiseptics and no ointments in preparing the wound for suture. Bacteriological examination was made of the "flora" of the wound, and the presence of streptococci was taken as an indication for more frequent washing and further delay in closure. To irrigate wounds they used magnesium sulphate, 20%, or sodium chloride, 10%. At closure they excised tissue as indicated, put in streptocide (sulfanilamide), and closed the skin with widely-placed interrupted sutures.

The Hospitals for "Lightly Wounded" are designed to relieve congestion in general hospitals occupied with the care of severe injuries. They receive their wounded patients direct from the front or after a short period in a Sorting and Evacuation Hospital. One other type of case is also received here, *i.e.*, convalescent medically sick from other hospitals. On the other

hand, those patients who were originally seriously wounded are not transferred but remain in that hospital where their treatment was given, receiving rehabilitation there.

The large hospital which we visited had been a spa, located pleasantly in a wood. There seemed to be a happy spirit among patients and staff. There was adequate equipment for diathermy, short-wave treatment, and hydrotherapy. Gymnasts and physicians took specialized groups for regular exercises, each class 55 minutes daily. Numerous secondary excisions of scars and wound closures were done here.

There was plenty of opportunity for indoor sports and many courts for volley ball, which is played with six on a side, and was said to be Russia's favourite outdoor sport.

NEUROSURGERY

Specialization in the field of neurosurgery, as in other fields, has been developed enthusiastically in the U.S.S.R. There are about 7,000 military neurosurgical beds, of which 3,200 are "at the front". Practically all of these beds are under the care of pupils trained in the "school of neurosurgery"* created by Lt.-General Burdenko during the 12 years before Russia became involved in what they term the "patriotic" war.†

An excellent summary of Soviet methods of treating head injuries was presented by Burdenko's pupil, Professor Lebedenko, at the last annual meeting of the American Neurological Association in May, 1943. This is shortly to be published, I assume, in the *Archives of Neurology and Psychiatry.*

The question of whether the closed or the open method is to be preferred in the treatment of head injuries was considered at some length early in the war. It was concluded that the former was preferable under ideal conditions and when not delayed longer than 12 hours. However, in practice, the open method is usually employed as follows: The skull opening is enlarged conservatively under local anæsthesia, and the brain wound washed out. The wound is left open but sulfonamide is applied locally, as a powder or in a suspension, and given by mouth or vein.

Secondary operation for head wounds: Even if the wound is infected they carry out a secondary operation, removing foreign bodies, but taking care not to go beyond the "line of demarcation". If the patient is to remain under the care of the operator, Koreisha* would often close the scalp, closing the dura if possible. This procedure was described by Lebedenko in the lecture cited above. Koreisha occasionally uses a stab wound drain in the scalp at a distance.

BLOOD AND BLOOD SUBSTITUTES

In the field of preparation of blood and blood substitutes, the work of the Central Institute of Hæmatology of Moscow is outstanding, under the leadership of Professor Bagdasarov, Director, and with the assistance of Academicians Spassokukotsky and Bogomoletz. There are 79 similar filial institutes in the U.S.S.R. and 500 smaller collecting centres.

Blood is preserved in 5% sodium citrate and 25% glucose solution. If kept in this Institute, it is preserved for 30 days or, if transported, for 15 to 17 days. It is sent to the front by air in well insulated boxes which will protect the blood for 6 hours against a temperature of 40° below zero. At the front it is refrigerated in each hospital.

In regard to blood substitutes, serum is generally preferred to plasma because it is thought to be better stored and to give less trouble in the hands of the inexperienced. Dried serum is used as well as liquid. Blood substitutes are prepared in large glass ampoules, 200 to 250 c.c., and sealed by closing the glass with heat. For dried serum an ampoule of distilled water is attached. They add glucose to the serum before drying, and find that this results in a solution, when ready for use, which is clearer than the ordinary liquid serum.

Serum transfusine is an isotonic and isionic 20% dilution of serum with modified Ringer's solution. They also add alcohol to a solution of sodium and potassium chloride with magnesium chloride and glucose for intravenous use in post-traumatic and postoperative conditions.

Colloid infusine is prepared from the casein of milk, the antigen having been removed. It seems to be as useful as plasma. Up to amounts of 800 c.c. it may be used without reaction. It contains 2 or 4% of casein.

* Publications from this "school" are summarized in French in "Problèmes de neurochirurgie", 1937-1940, Ed. N. N. Burdenko, Central Institute of Neurosurgery, Oulianovskaya, 13, Moscow.

† The previous war is apt to be called the "imperialistic" war.

* Neurosurgeon at the First Medical Institute and Secretary of the Soviet National Research Council.

All of their new solutions are given preliminary trial in the surgical clinics, such as those of Professor Spassokukotsky, Professor Ruffanov, and others. They are also submitted to the National Research Council for approval before they are sent to the army for general use.

Technique of blood collection.—Five hundred to eight hundred donors are bled daily at the Central Institute and large stocks of blood pass through it from filial institutes and collection points. Six hundred donors were handled on the day we were present. The donors are now 97% women. In each case the woman's name, as well as the group, date, etc., is placed on the specimen that is to be forwarded. When more than 700 c.c. of these blood derivatives are to be given it is considered wise to use serum or plasma of the recipient's group.

The use of the woman's name on the bottle of transfusion liquid sometimes leads to correspondence and friendship between donor and recipient, an occurrence which no doubt increases enthusiasm among neighbouring donors. One soldier, wounded for the second time and in a critical condition, is said to have demanded blood from the same woman who had saved his life before! The donor receives money for her blood (550 c.c.), but 85% of them return the money voluntarily. They are also given a meal, an item of some importance.

The asepsis of blood collection and subsequent handling is careful and extremely elaborate. Sterility is controlled in every case and precautions against contamination in every step of each process are rigidly supervised. Workers are masked and gowned, and nasopharyngeal cultures are taken regularly.

Cadaver blood is still utilized at the Central Institute of Traumatology in Moscow under the supervision of Professor Yudin. This method of obtaining about 3 litres of blood from each cadaver was described in medical literature before the war. The technique is time-consuming and the method has not been followed widely by other hospitals. Cadaver blood has not been used to replace living-donor blood for supply to military hospitals.

MISCELLANEOUS NOTES

At the Botkin Hospital in Moscow Professor Louria estimated the incidence of gastric ulcer among Soviet casualties to be in the neighbourhood of 17 to 18%, and at the Central Institute of Traumatology the increased incidence of this lesion was pointed out among the women at home, due to the increased strains of wartime.

The use of Bogomoletz' antireticular cytotoxic serum* was recommended in the treatment of gastric ulcer. It was also stated that injection of this serum in small doses accelerates callus formation about fractures and increases the healing of wounds.

During the early stages of a fracture, Professor Friedland, of the Botkin Hospital, emphasized the importance of improving circulation in the adjacent muscles. For this purpose he uses diathermy during the first 10 to 12 days in closed fractures and, a little later, in compound fractures. He employs massage early and begins movement after the 15th day.

He also employs, with some enthusiasm, alcohol-novocaine injection into the tissue about the fracture. This procedure, he says, produces a periarterial sympathectomy, thus warming the extremity. It relieves pain and spasm and dilates the vessels for about two weeks. Histologically, there seems to be no change, and he believes the alcohol acts selectively upon nerve fibres. The procedure is to be employed only during the first two weeks after injury, not later.

To illustrate the effect of the alcohol he selected a patient with fracture of the femur of a few days' duration. Tongs had been applied for traction. Eighteen c.c. of 70% alcohol and 2% of novocaine were injected near the fracture into the area of induration. It caused severe pain, but relief came shortly and the patient spoke of numbness. Another similar patient whose leg had been thus injected 5 days previously was examined. The femur could be moved at the site of the fracture without pain.

The beneficial results of the alcohol were said to be due to (*a*) increased local circulation; (*b*) irritation of mesoderm; (*c*) earlier callus formation by 20 to 30%; (*d*) abolition of spasm.

The plastic surgery of Professor Fromkin (genito-urinary consultant to the Red Army) was obviously outstanding in the field of genito-urinary surgery. He demonstrated a large number of patients who had lost external genitalia as a battle casualty. Reconstruction of the urethra by means of tubular skin grafts was satisfactory, and implantation of cartilage into the corpus cavernosum so as to restore capacity for erection was dramatic, to say the least.

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* *Brit. M. J.*, 1943, **2**: 203.

Evacuation of the wounded from the battle front is carried out in various ways depending on local conditions. The injured are first removed by stretcher or on flat strips of canvas which can be dragged over the ground. In the winter the canvas may be filled with water, which freezes and makes a boat, said to be easily pulled over the snow. Sleds on runners are also used, and patients are occasionally carried on the back. They also use a single bicycle tire under an ordinary stretcher to wheel patients out. As in all heavy work, women bear an important, but not a predominant, share in the evacuation of wounded. Further evacuation is then carried out by motor lorry, horse-drawn vehicle, aircraft or train, depending upon the local terrain.

In the first line, their actual record was that 21% are dressed or operated upon within 24 hours, 59% within 48 hours, and 19% within 72 hours. In the second line, 26% within 24 hours, 62% within 48 hours, and 19% within 72 hours.

Triage is carried out as early as possible. In the first place, all those whose injury is not urgent are sent from the Sorting Hospital to Hospitals for Lightly Wounded. This relieves the pressure in the general hospitals considerably. Segregation of patients according to the site of injury is carried out early, beginning at the sorting and evacuation hospital at the front and continuing through the special hospitals in the next line and the field hospitals. This specialization is given great emphasis. Thus a wound of the thorax or a head injury is treated in a special hut or tent at the beginning, and eventually reaches a specialized hospital or service for definitive care.

TREATMENT OF WOUNDS

In general, the treatment of wounds is briefly as follows: Strong antiseptics are not used, aside from iodine on the skin itself. Sulfonamides are employed with great enthusiasm locally, by mouth and vein. Local applications are of ultrasonic micro-crystalline suspensions or of powder. These drugs are not given to the soldiers to carry.

General Giergolav pointed out that wound excision was considered impossible on the battle field, but treatment was carried out later as follows: Excision of damaged tissue; sulfonamide applied locally; large wounds of soft tissues immobilized in plaster or splint. Primary wound suture is in general forbidden, and plasters are not to be applied until three days after injury. If there are no complications secondary suture is carried out at a later time. If infection is then present, they usually excise the infected tissue, but do not close. Grafts are often placed on granulating wounds. When there is a large scar they excise it.

The management of fractures of the femur was discussed by Professor Yudin, who described three manœuvres: (*a*) washing and spinal anæsthesia; (*b*) operation; (*c*) application of plaster. The surgeon himself carries out the operation only. He excises damaged tissue, even if infected. The wound is washed with saline solution. The skin is then sutured down to the deep fascia so as to hold the wound open and decrease œdema. The eventual contraction of the scar, as healing progresses, thus pulls the skin together. Sulfonamide is applied generously without packing. Plaster is then applied by assistants, without padding, directly to the skin.

The above process is carried out regardless of infection. The immobilization, he says, makes it safe. He showed x-rays of patients who had been treated thus 3, 5, 7, 10 days after injury. Mortality by this closed plaster method was said to be 5.4%.

The treatment of frost-bite has been a subject of study for some years by Lt.-General Giergolav, and some of his pupils. Beginning in 1934, his work seems to have shown that there was no advantage in warming a frozen extremity slowly, as suggested in much of the medical literature. Necrosis was said to develop as a secondary process in any case and depended largely on the duration of the action of the cold. They found no ill effects from heating frozen experimental animals quickly, and the general as well as the local result was better.

The method of treatment of frost-bite recommended by Giergolav is as follows:

Heat the extremity and the patient. (In practice the extremity is generally allowed to warm up at room temperature). At the end of 5 or 6 days after the freezing, make a longitudinal incision in the necrotic tissue below the line of demarcation. This he calls necrotomy. It is said to allow escape of œdema fluid and to promote the process of mummification. If the bone has been involved in what he calls a 4th degree frost-bite, he would amputate

through the necrotic tissue between 6 and 10 days after freezing, taking care to leave on the stump a few millimetres of necrotic tissue. These operations are said to promote the formation of a dry eschar and make possible definitive amputation in a short time. In conclusion, it may be pointed out that notable advances in surgical treatment in this war are few in number, although important. When each is considered in turn it is apparent that none has been overlooked in Russia.

First: sulfonamides. They have been used differently but as enthusiastically in the U.S.S.R. as in other countries.

Second: radical surgical wound excision without wound closure, followed by complete immobilization in plaster; the Soviet surgeons practice this as well as ourselves. Indeed they sometimes carry it further, to the excision of lacerated tissue after it has become infected.

Third: provision of blood and blood substitutes for hæmorrhage and shock; this they also have organized extremely well, and surely on a larger scale than anywhere else in the world.

Fourth: development of surgical specialists; it must be admitted that their specialists ignore certain refinements of technique, but, thanks to a more immediate triage, these specialists are put in charge of Soviet wounded at an earlier stage and from the front line hospital on back.

Fifth: evacuation of wounded by air, developed by the Germans in the first years of the war. This they have used in a somewhat different way and have extended it so as to care for the wounded partisans, to fly them over the enemy lines for hospital treatment.

Sixth: improved treatment of neuroses; psychoneurosis is rare in the Soviet Union for they have an ample supply of its specific antidote, *i.e.*, high morale. This they do not need to import from abroad.

These statements should not be taken to mean that the surgeons of the U.S.S.R. lead all other nations in surgery. They do not; but they are making their own significant contributions. Like other countries, they have bad surgeons as well as good ones. Some techniques are obviously inferior to our own; others are superior. They are in the same boat with us and they are pulling their weight. The sound system of medical education now in force gives promise of an increasing future contribution to medicine.

Much is to be gained by exchange of medical information with Russia from a scientific point of view; more from the point of view of general understanding and future friendship. There is a strong desire among the Russian people for acquaintance and friendship with their allies.

General Burdenko, Chief Surgeon of the Red Army, and stalwart leader of the profession, at lunch, after a morning spent in the First Medical Institute of Moscow, wrote out the following toast, the translation of which I carried away with me: "I ask you to fill your glasses and listen to the few words I have to say: Our friendship must be tighter; this is only the beginning of it. To our friendship in science, in life, and in the world."

THE EFFECT OF PLASTER BANDAGES AND LOCAL COOLING ON HÆMOCONCENTRATION AND MORTALITY RATE IN BURNS*

By A/Surg. Lieut. Commander Edward A. Sellers, R.C.N.V.R. and J. W. Willard, M.A.

SEVERAL papers have appeared showing that compression methods of treatment have a beneficial effect on the healing of burns.[1] These procedures decrease the local loss of fluid, the importance of which is well recognized as a factor in the etiology of burn shock. An attempt has been made in experimental animals to reduce local fluid loss to a minimum by applying plaster bandages immediately after burning and before swelling could take place.

In clinical cases of burns it is difficult or impossible to standardize either the degree of burn or certain details of treatment. By the use of experimental animals it was possible to produce a uniform burn, and, by using a suitable number of controls, to assess the method of treatment more accurately than has been possible clinically. Studies were made on the hæmoconcentration and mortality rates resulting after the treatment.

As cooling and limb position are of importance in preventing swelling after frost bite, immersion foot and in other disturbances of the peripheral circulation[2] attempts were made to reduce local fluid loss after superficial burns by cooling and elevation of the limbs.

* R.C.N. Medical Research Unit, Banting and Best Department of Medical Research, University of Toronto.

METHODS

Anæsthetized dogs were used as experimental animals. After preliminary experiments, an arbitrary standard of burning was selected, the extent of the burn depending on the weight of the animal. The fact that the surface area of dogs of similar size and shape, and within narrow limits of weight, bears a close relationship to displacement was utilized. The area for a "15%" burn was obtained by immersing the legs in water until a volume of water equal to 15% of the weight of the animal had been displaced. These levels were then marked with indelible pencil. A 15% burn therefore means that the weight of water displaced by the burned part of the limb is equal to 15% of the body weight.

Sodium pentobarbital anæsthesia was used in all cases. An initial dose of 35 mgm. per kilogram was given, and, when necessary, additional doses of 5 or 10 mgm. per kilogram. After anæsthetization the dog's legs were immersed in water at 100° C. for one minute. Hæmoconcentration was followed by hourly hæmoglobin (Sahli) and hæmatocrit (Wintrobe) readings, using blood from the jugular vein. From previous experience it was found that with this degree of burn, and under the conditions of our experiment, practically all untreated animals which died, did so within twenty-four hours. Due to the hazard of infection and difficulty of adequate nursing care, the treated animals were usually observed for only forty-eight hours and were then deeply anæsthetized and sacrificed.

In the treated groups, rapid drying, commercial plaster of Paris bandages were applied over the burnt areas immediately after burning. Care was taken to avoid any initial compression by the bandages. Three groups of experiments were carried out. In the first an 8% burn was produced in the hind limbs of 20 treated and 20 control animals. In the second, an 8% burn was spread over the four limbs of 8 treated and 8 control animals. In the last, a 15% burn was produced on the four limbs of 6 treated and 10 control dogs. This latter burn represented the maximum it was possible to give on the extremities alone. Adhesive tape was wrapped beneath the upper edge of the plaster to prevent chafing and ensure close apposition to the skin surface. An attempt was made to carry the plastering well above the burn, but this was difficult in the first and third groups, owing to the extent of burning.

For the suspension and cooling experiment a 15% burn was produced on the four legs of 4 dogs. Moistened gauze was loosely applied to the extremities. The limbs were then suspended and a current of air directed over them. The body was well blanketed, to conserve body heat.

With a similar burn, using 11 control and 12 experimental animals, double-walled rubber sleeves were applied to the four limbs, and water at 8° C. was circulated through the sleeving. A water pressure of from 5 to 20 mm. of mercury was developed within the envelope. Rectal and skin temperatures were recorded periodically. The cooling experiments were continued for a period of forty-eight hours.

OBSERVATIONS AND RESULTS

1. Figs. 1 and 2 show that very little hæmoconcentration occurred in the animals treated by the immediate application of plaster. The graph in Fig. 1 shows that where the plastering was carried well above the burn the hæmoconcentration was negligible.

2. In Table I the mortality rates in the three groups of plaster experiments are listed; 47.4% of the control animals lived, while 94.5% of the treated animals survived.

3. The treated dogs showed no evidence of pain or discomfort after the effect of the anæsthetic had passed off.

4. Bloody diarrhœa and hæmaturia were observed in both plastered and control animals four to five hours after burning. These signs were frequent and often severe in the untreated animals, less so in the plastered group. In both groups hæmolysis in the blood samples appeared within an hour of the burn. As time passed this increased in severity.

5. If casts were removed after twenty-four hours the legs appeared normal but soon blistering between the toes and swelling occurred in a similar manner to that of the controls. If the casts were removed after forty-eight hours some swelling occurred but never became prominent. After seventy-two hours swelling was minimal. When the casts were removed after a longer period (up to eleven days) no swelling was observed, although the deep circulation was well maintained.

6. At necropsy, marked swelling, with blistering between the toes was invariably seen in the control animals. The skin of the legs had a leathery appearance, and a large amount of reddish subcutaneous fluid was present.

When the plaster was removed after death swelling and blistering were absent as were subcutaneous collections of fluid. Microscopically, islets of dermal cells were seen in the hair follicles and skin glands. The same appearance was present in the skin of control animals, but was separated from the underlying tissue by large amounts of fluid.

The viscera were usually congested. The lungs, liver, kidneys, adrenals, pancreas and intestines showed this in varying degrees. Intense congestion of the intestinal mucosa was especially prominent in the duodenum. Shallow ulceration was seen at this site on several occasions. Microscopically, in some cases the liver showed cloudy swelling along with congestion; in a few animals damage to the central cells of the liver lobules was seen. No widespread necrosis was evident in any case.

While congestion occurred in the dogs with plastered extremities as well as in controls, it was a less consistent and less severe finding.

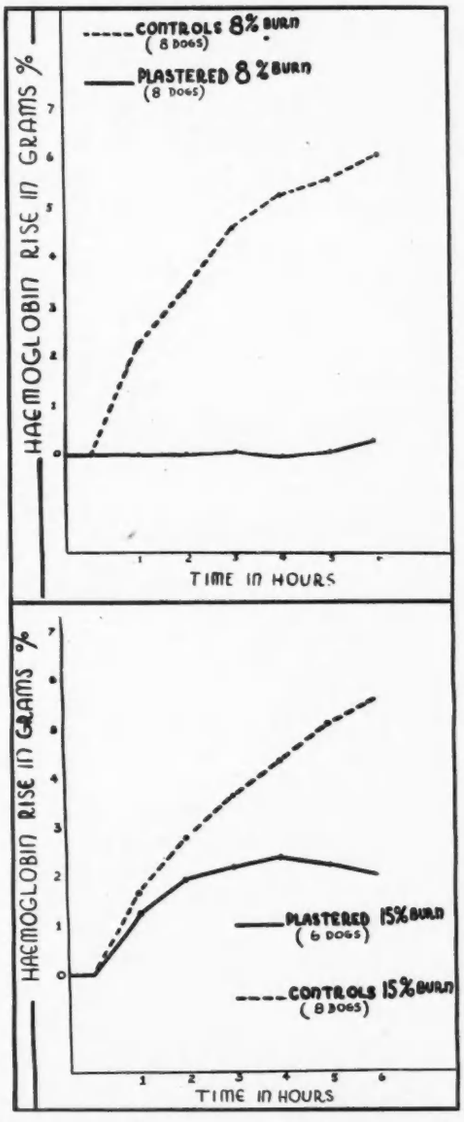
CONTROLS 8% BURN (8 DOGS)
PLASTERED 8% BURN (8 DOGS)
HAEMOGLOBIN RISE IN GRAMS %
TIME IN HOURS
PLASTERED 15% BURN (6 DOGS)
CONTROLS 15% BURN (8 DOGS)
HAEMOGLOBIN RISE IN GRAMS %
TIME IN HOURS

Fig. 1.—An 8% burn was produced on the 4 legs of 8 dogs treated by plaster application and on 8 untreated controls. A great increase in hæmoglobin percentage occurred in the untreated group. No appreciable rise occurred in the plastered animals.

Fig. 2.—A 15% burn was produced on the 4 legs of 6 dogs treated by plaster application, and on 8 untreated controls. A large rise in the hæmoglobin percentage occurred in the untreated group. A smaller rise was noted in the plastered animals. Due to the extent of the burn, plastering was more difficult and less effective than before.

AMOUNT OF BURN	CONTROL		PLASTER	
	DIED	LIVED	DIED	LIVED
8% (TWO LEGS)	11	9	2	18
8% (FOUR LEGS)	3	5	0	10
15% (FOUR LEGS)	6	4	0	6
TOTALS	20	18	2	34
PERCENTS	52·6%	47·4%	5·5%	94·5%

Table I.—This table shows comparative mortality in the three groups of experiments performed. The striking difference between survival rate of the treated and untreated animals can be seen.

7. When cooling was combined with a minimal pressure, as in the rubber sleeving experiment described, a drop in skin temperature of 15° C. was produced. The cooling with a varying pressure of from 5 to 20 mm. of mercury was continued for forty-eight hours; 9 of the 12 treated animals survived and 4 of the 11 controls lived. A sustained light anæsthesia was necessary during the entire period. When cooling was effected by passing a current of air over the moistened suspended limbs of the animal 3 out of 4 dogs died. The skin temperature was kept 10° C. below the normal for a period of six hours in this experiment.

Hæmoconcentration was invariably lower in the treated dogs than in the controls.

Pathological findings were similar to those described for the experiments using plaster casts. Hæmolysis in blood samples, hæmaturia, melæna, and visceral congestion all occurred, but were more variable and less severe in the treated group.

DISCUSSION

The most striking feature of these experiments is the reduction of mortality brought about by the immediate application of plaster bandages to burned extremities. By enclosing the limb in a non-extensible casing, without in-

itial compression, fluid loss at the site of the burn is practically eliminated. This is borne out by blood studies, which show that hæmoconcentration does not occur to an appreciable degree when plastering is carried high above the burn level (Fig. 1). When this is not possible, owing to the extent of the burn (Fig. 2), some hæmoconcentration does occur, suggesting that fluid loss takes place above the cast.

The pathological findings, hæmaturia and bloody diarrhœa which occurred in some cases, regardless of hæmoconcentration, indicate that other factors are of importance in burn shock. The hæmolytic factor present in lymph from a burned area reported by Glenn, Peterson and Drinker,[3] and the gradually increasing hæmolysis observed support this contention. Another important effect of plaster treatment has been emphasized by Glenn, Peterson and Drinker.[3] These workers draw attention to the necessity for removal of the coagulated extravascular exudate before healing can occur. It is reasonable to assume that when this remains in large amounts the rate of healing will be slow. The exudate may separate living islets of dermal tissue from the deeper blood supply with subsequent death of the overlying skin. Plaster, or presumably any compression dressing decreases the exudate without demonstrable ill effects on the skin itself or the deep circulation. As compression treatment decreases or prevents exudation it would seem imperative that treatment of this type be early if it is to be successful in preventing "shock". Lischer and Elman[4] who applied elastic bandages one hour after a somewhat similar type of burn to that described noticed that hæmoconcentration was less, but that the mortality rate was not affected. Local fluid loss takes place most rapidly in the first hour after a burn. The fact that in the experiments described plaster was applied immediately after the burn would explain the difference in mortality rates. In the experiments involving cooling of the limbs the results resemble those of the plaster experiments. From the known effects of cooling on capillary permeability and tissue metabolism it might be assumed that decreased local fluid loss is the factor responsible. Nevertheless, it is a possibility in either type of experiment that a reduction in absorption from the burned area, or in the exchange of metabolites between the blood and burned tissue might influence the permeability of capillaries elsewhere in the body. The measurement of lymph flow from unburnt areas has failed to indicate that any great loss of plasma occurs in areas distant from the burn.[5] The chemical studies of Glenn, Muus and Drinker likewise indicate "that there is no increase in capillary permeability in normal regions of the body distant from the burn".[6]

SUMMARY

1. A displacement method of producing a standard burn in water at 100° C. is described.

2. The effect on mortality and hæmoconcentration of the early application of plaster to burned extremities was investigated.

3. Mortality was decreased markedly.

4. Hæmoconcentration was reduced to a negligible degree, suggesting that "general loss of fluid" did not occur in these experiments.

5. Cooling the extremities, together with minimal pressure, reduced the mortality rate and hæmoconcentration appreciably.

6. Pathological findings indicate that even in the absence of hæmoconcentration factors other than fluid loss are of importance in burns.

The authors wish to express their gratitude to Surgeon Commander C. H. Best, R.C.N.V.R., Director of the R.C.N. Medical Research Unit, and the Banting and Best Department of Medical Research for his interest and valuable advice in this study.

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RÉSUMÉ

Des brûlures sont produites en plongeant dans de l'eau chauffée à 100° C. les membres de chiens expérimentaux jusqu'à ce que l'eau déplacée égale 15% du poids de l'animal. Les membres de ces chiens sont alors entourés de bandages plâtrés pendant 24, 48 et 72 heures. Dans une autre série d'expériences, les membres brûlés sont simplement refroidis et placés de telle sorte qu'il ne s'exerce sur eux aucune compression. Ces travaux ont permis de conclure à une baisse marquée de la mortalité et à une diminution négligeable de l'hémoconcentration. Il est probable que la déshydratation a été très minime puisque le sang a conservé à peu près sa concentration habituelle. On commence à entrevoir d'autres facteurs du shock qui accompagne les brûlures, notamment les facteurs hémolytique et vasculaire.

JEAN SAUCIER

MARCH HÆMOGLOBINURIA

By Major R. A. Palmer and
Lt.-Col. H. S. Mitchell, R.C.A.M.C.

A GENERAL classification of the paroxysmal hæmoglobinurias is as follows: (1) paroxysmal hæmoglobinuria from chilling (syphilitic type); (2) paroxysmal nocturnal hæmoglobinuria in chronic hæmolytic anæmia (Marchiafava-Micheli disease); (3) favism (sensitivity to the products of the plant *Vicia fave*); (4) myoglobinuria ("paralytic hæmoglobinuria"); (5) march hæmoglobinuria; (6) miscellaneous (toxic) hæmoglobinurias, as in severe acute infections, some poisonings, incompatible transfusions.

March hæmoglobinuria is a form of paroxysmal hæmoglobinuria of unknown cause, occurring in certain individuals following exertion in the erect posture. The condition has been reviewed by Gilligan and Blumgart[1] who found 40 cases in the literature and reported extensive observations on three additional cases. All the cases were males and the onset of symptoms was variously between the ages of 16 and 35 years. The hæmoglobinuria appears suddenly without obvious precipitating cause, and runs a benign course of usually less than two years, though it may persist for 20 years. During this period the patients are in apparently excellent health, but suffer recurring episodes in which bloody urine is passed following erect exertion varying in degree from a short fast walk to runs of several miles. A period of such exertion as short as nine minutes may precipitate an attack. In addition to exertion the erect posture is apparently essential to the production of attacks, and in a number of instances it has been shown that comparable exertion in varying degrees of kyphosis will fail to produce an attack.

Gilligan and Blumgart have shown that the attacks consist of a rise in the free plasma hæmoglobin (hæmoglobinæmia) during the exertion, falling abruptly at the end of exertion, and associated with excretion in the urine of a part of the free hæmoglobin (hæmoglobinuria). In their own cases the amount so excreted was always less than 10% of the amount liberated into the blood plasma, and occurred over a period of one to three hours. In exceptional cases the hæmoglobinuria may last 18 hours[2] and, rarely, for three days.[3, 4] The renal threshold for hæmoglobin has been found low in the studied cases, being about 20 mgm. %, compared to the normal threshold of over 100 mgm. %. By spectroscopic methods the pigment in the plasma and urine has been shown to be oxyhæmoglobin.[1, 2]

The first quantitative studies of both plasma and urine were done by Gilligan and Blumgart who found the amount of hæmoglobin involved in a paroxysm to be small, representative of 6 to 40 c.c. of whole blood, and insufficient to cause any demonstrable change in the peripheral red blood cell count or hæmoglobin.

The etiological factors are still obscure; no abnormalities of blood cells have been shown, or hæmolytic agents found. A slightly greater proteinuria than can be accounted for by the excreted hæmoglobin is passed during paroxysms, but not at other times. Between paroxysms there are no abnormal findings in plasma or urine. In other respects the patients are usually in robust good health, many being athletes; the condition is named from the fact that it has occurred in soldiers during a march. Although in some cases varying degrees of lordosis have been noted, other reported abnormalities are uncommon, mild chronic jaundice in three cases, a palpable spleen in one case, palpable enlargement of the liver in three cases. No evidence of renal disease or abnormalities has been found.

The rather alarming appearance of blood-stained urine is usually the only symptom, though in some cases there have been varying degrees of discomfort in the abdomen and lumbar region during paroxysms. The general belief has been that the raised plasma hæmoglobin is due to hæmolysis of a relatively small amount of blood, induced in some way by exertion in the erect posture, and it has been variously suggested that this may occur locally in the kidneys; that it may be related to orthostatic albuminuria; that extravascular hæmolysis may occur in the spleen; or that there may be venous stasis in the abdominal viscera. Supporting evidence for all these concepts has been completely lacking. Attempts to reproduce the attacks in the same patients by means other than exertion in the erect posture have failed (except for one of the cases reported by Witts[2] in which hæmoglobinuria followed the severe exertion of running up and down one thousand steps, keeping bent over as much as possible. As it is difficult to run downstairs bent forward, part of this exertion may have been erect).

Since early in 1940 there have been admitted to Canadian General Hospitals overseas 4 cases of march hæmoglobinuria in a total of over 75,000 admissions. Owing to its benign course, patients exhibiting the syndrome may not reach hospital, and the incidence is probably greater than the above figures would indicate. In an unselected group of 22 marathon runners Gilligan and Blumgart found three cases of frank hæmoglobinuria and noted that 18 of the 22 men showed plasma hæmoglobin values above normal at the end of a race.

Two patients with this syndrome have been admitted to a Canadian General Hospital in the past year and their findings are to be reported here.

CASE 1

Pte. R.A.P. White Canadian, aged twenty-one years. Infantryman. In excellent health till the end of February, 1942, when during route marches he began to suffer abdominal discomfort "rising from the groins", followed by the passing of blood-coloured urine. Symptoms would last two or three hours, promptly clearing at rest, but have recurred on every route march since. Admitted in March, 1942, general examination and genito-urinary investigations were negative, so he was returned to duty. Re-admitted July 28, 1942, with a history that symptoms had recurred after every route march in the interval.

Enquiry revealed that he had lived all his life in Canada till coming to England in the army. His civilian occupation was poultry ranching and tire repairing, not as energetic as army life. He enlisted in January, 1940. No chronic complaints or past illnesses recalled, except for a minor scrotal injury at football, when twelve years old, when the penis oozed a little blood, but this cleared up in two weeks without recurrence. Family history negative for hæmorrhagic or other chronic disease.

Examination revealed a robust young man, of good colour, energetic, height 5′ 8″, weight 170 lb., pulse 60 to 70, blood pressure 120/80. Spleen palpable for two fingersbreadths below the costal margin; liver not enlarged. Slight left varicocele, otherwise general examination negative. An attack was induced by a march of eight miles and he was cystoscoped. The bladder contained some reddish brown urine and dark smoky urine was seen spurting in a normal flow from each ureteral orifice. This urine contained only rare red blood cells, but gave a strongly positive benzidine reaction.

The patient remained under observation from July 28 to November 10, 1942, during which time the observations detailed below were made. He remained afebrile throughout, felt well, was willing and energetic in assisting about the ward and appeared to be in robust general health. His only symptoms were the passing of red or brown urine as a consistent sequel to a brisk walk of two miles or more, and occasional minor abdominal discomfort during these marches. The spleen diminished in size and was not palpable during October. His weight remained unchanged. Early in November, 1942, it became impossible to induce paroxysms and he was discharged in apparent remission, having exhibited symptoms for over eight months. Prior to discharge his medical category was lowered as a temporary expedient to avoid vigorous exertion until it should become certain that an exacerbation would not occur. This was done because of the theoretical risk that frequently-repeated prolonged paroxysms might result in renal damage from precipitation of the hæmoglobin in the tubules.

LABORATORY FINDINGS

Urinalysis.—(1) At rest (many specimens): usually acid, specific gravity 1.012-30. Negative. (2) After paroxysms: dark red-brown albumin one plus, rare red cells, marked positive benzidine reaction.

Cystoscopy and pyelography.—No evidence of structural abnormality found. X-ray plates in supine and erect postures revealed no evidence of renal ptosis.

Blood count.—July 28, red blood cells 4,600,000; Hgb. 84% (12.2 grm., Hellige); white blood cells 6,300; polymorphonuclears 72; lymphocytes 26; eosinophiles 2. October 26, red blood cells 4,910,000; Hgb. 83% (12.0 grm., Hellige); white blood cells 7,600; polymorphonuclears 70; lymphocytes 25; eosinophiles 1; monocytes 4. No abnormalities of the erythrocytes in stained smears or fresh wet suspensions before or after paroxysms. Rouleaux formation occurs equally rapidly. No evidence of malarial parasites.

Erythrocyte fragility.—Hæmolysis begins at 0.40% saline before and after a paroxysm.

Reticulocytes.—Less than 0.5% with no rise after a paroxysm.

Bleeding time.—Four minutes (normal one to three minutes).

Clotting time.—Eight minutes (normal five to ten minutes).

Blood sedimentation rate (Wintrobe tubes).—Two mm. fall in one hour.

Blood Wassermann and Kahn tests.—Negative.

Plasma protein (estimated by the falling drop method): 6.84 grm. before, 6.90 grm. after a paroxysm.

Blood van den Bergh.—0.6 mgm. % before, 1.2 mgm. % after one paroxysm.

Plasma chlorides.—577 mgm. % before and after one paroxysm.

Donath-Landsteiner test for cold hæmolysins (done in the presence of guinea pig complement).—Negative on blood obtained before and after a paroxysm.

Test for sensitivity to cold (Rosenbach).—Immersion of the four extremities in ice water for forty minutes failed to produce a paroxysm. (Ordinarily the test is done for ten minutes).

Spectroscopic examination of blood plasma and urine following a paroxysm were kindly done by Dr. E. J. King and Mr. G. E. Delory of the British Postgraduate Medical School. Employing the Hartridge reversion spectroscope, the band for oxyhæmoglobin was found prominent in all specimens of blood plasma, no other bands being visible. In the specimen of urine the bands of hæmoglobin could not be distinguished, nor could the band of methæmoglobin be produced with ferricyanide. Several ill-defined bands could be seen which were probably due to a mixture of hæmatin and hæmochromogens formed from altered hæmoglobin (the specimen was unfortunately four days old at the time of the examination).

Quantitative estimations of the blood plasma and urine hæmoglobin were done following some of the paroxysms and at rest and the findings are shown in Table I.

CASE 2

Pte. K.B. Aged 19 years. White, Scottish-Canadian. Infantryman. Admitted November 7, 1942, with a history of good general health except that four months prior to admission following a twelve-mile forced march during a period of about two hours, his urine was dark reddish-brown for about twelve hours. Similar episodes which cleared more quickly followed every march of two miles or more, and were sometimes accompanied by a vague nausea, but he suffered no other discomfort and was not disabled. Prior to admission he noted attacks less frequently. About a month after the onset of this urinary symptom he suffered a minor enteritis for several weeks, had a persistent chest cold for some weeks prior to admission, and has always suffered a tendency to train or car sickness. As a child he had nocturia and in the past two years has noticed some minor burning on urination. Scarlet fever and mumps as a child

were the only illnesses recalled. No family history of hæmorrhagic or other chronic disease.

Examination revealed a slender youth, temperature 98°; pulse 80; blood pressure 130/70; height 5′ 9″; weight 140 lb. Good colour, looks well, apart from some undernutrition; no postural abnormalities. A few firm glands were present in the anterior cervical triangles but there was no general adenopathy. The lungs were clear. A soft systolic murmur confined to the apex was noted. The liver and spleen were not enlarged. General examination otherwise negative.

Urinalysis (resting, several specimens).—Negative.

Blood Kahn (two specimens).—Negative.

Blood sedimentation rate (Wintrobe tube).—Six mm. in one hour.

Blood count.—Red blood cells 4,420,000; hgb. 92% (13.13 grm.); white blood cells 9,800; polymorphonuclears 69; lymphocytes 31.

X-ray of chest.—Negative.

Intravenous pyelogram.—No abnormalities of structure or position.

Test for sensitivity to cold (Rosenbach).—Following immersion of hands and feet in ice water for thirty minutes no hæmoglobin appeared in the urine, and the

TABLE I.

HGB. ESTIMATED IN BLOOD PLASMA AND URINE

Date	*Length of walk*	*Elapsed time*	*Blood plasma Hgb. mgm. %*	*Total Hgb. excreted in urine*	*Remarks*
Oct. 9	Resting	....	3.9	....	
	1 mile	....	13.7	nil	
Oct. 10	Resting	....	6.5		
	2 miles	....	15.4	nil	
Oct. 11	Resting	....	4.2		
	4 miles	....	32.8	2 plus	
	1 hr. after	....	14.9		
	2¾ hrs. after	....	6.7		
	2nd exercise—				
	2 miles	....	17.2	nil	
	1 hr. after	....	11.2		
	2 hrs. after	....	7.8		
	3½ hrs. after	....	8.1		
Oct. 12	4 miles	....	37.0	93.3 mgm.	With abdominal binder.
Oct. 13	2 miles	....	17.54	nil	
Oct. 14	2 miles	....	20.57	trace	
Oct. 15	2 miles	....	13.08	nil	
Oct. 16	4 miles	47 min.	25.5		Standing continuously after exercise.
	1½ hrs. after	....	13.4		
	3 hrs. after	....	12.5	85 mgm.	
	4 hrs. after	....	8.4		
	5 hrs. after	....	7.6		
Oct. 17	4 miles	47 min.	23.0		Lying down immediately after march.
	1½ hrs. after	....	8.5		
	3 hrs. after	....	5.2	13.5 mgm.	
	4 hrs. after	....	4.6		
Oct. 18	Resting	....	4.6		Standing continuously after exercises.
	8 miles	92 min.	22.4		
	45 min. after	....	14.8		
	95 min. after	....	9.5		
	2½ hrs. after	....	5.8		
	3½ hrs. after	....	5.4	18.9 mgm.	
	4½ hrs. after	....	3.2		
Oct. 22	Resting	....	3.7		Lying down immediately after exercise.
	8 miles	100 min.	40.3		
	½ hr. after	....	31.8		
	1½ hrs. after	....	16.6		
	2½ hrs. after	....	8.8	90 mgm.	
	3 hrs. 35 min. after	....	6.2		
Oct. 24	8 miles	92 min.	33.8		Standing after exercise.
	15 min. after	....	28.3		
	95 min. after	....	11.2		
	150 min. after	....	11.8	85 mgm.	
Oct. 25	8 miles	94 min.	35.7		Standing after exercise with abdominal binder.
	1 hr. 35 min. after	....	16.8		
	2½ hrs. after	....	11.0		
	3½ hrs. after	....	7.9	203 mgm.	

blood plasma level was 4 mgm. % by the benzidine method.

Donath-Landsteiner reaction (done without guinea pig complement).—Negative.

Considerable difficulty was experienced in inducing an attack, although the blood plasma was always slightly pink at the end of exertion. Only one typical attack occurred under observation; following an eight mile run in 93 minutes the plasma hæmoglobin was 24 mgm. % and 68 c.c. of reddish brown urine containing 46.4 mgm. of hæmoglobin was passed within two hours. As the patient was apparently entering a remission observations were discontinued and he was discharged, having experienced symptoms less than five months.

DISCUSSION

Case 1 afforded an opportunity for detailed observation and a number of studies were done with particular reference to possible etiological or contributing factors. No abnormalities were noted in the blood cells, ordinary plasma constituents or urine, before or after a paroxysm, apart from the hæmoglobinæmia, hæmoglobinuria and slight albuminuria after erect exertion. Blood counts were not done following each paroxysm, but the fact that the counts were so similar at the beginning and end of the three months' study, during which about 40 paroxysms were induced, is contributory evidence that only small amounts of blood were involved in the episodes (see Table II) and is in keeping with the findings of previous observers.[1] Attempts to reproduce attacks by fever, multiple minor traumata, exercise in recumbency or on a bicycle, or to influence attacks by ascorbic acid, alkalinization of the urine, wearing of a tight abdominal binder, were all negative (see appendix).

TABLE II.

RELATIONSHIPS OF BLOOD PLASMA AND URINARY FINDINGS IN CASE 1.

Date	*Hgb. level in blood plasma mgm. %*	*Total Hgb. excreted in urine. mgm.*	*Calculated % of Hgb. excreted in urine.**	*Calculated total amount of blood involved expressed as c.c. of whole blood.**
1942				
Oct. 9	3.9	nil	..	....
Oct. 11	4.2	nil	..	....
Oct. 10	6.5	nil	..	....
Oct. 9	13.7	nil	..	2.6
Oct. 10	15.4	nil	..	2.9
Oct. 11	17.2	nil	..	3.3
Oct. 14	20.57	trace	..	4.0
Oct. 18	22.7	18.9	2.8	4.3
Oct. 17	23.0	13.5	2.0	4.4
Oct. 16	25.5	85.0	11.1	4.9
Oct. 24	33.8	85.0	8.3	6.5
Oct. 25	35.7	203.0	18.9	6.8
Oct. 12	37.0	93.3	8.4	7.1
Oct. 22	40.3	90.0	7.4	7.9

*Based on an assumed total plasma volume of 3,000 c.c.

Quantitative measurements of the plasma and urine hæmoglobin following some of the induced paroxysms were done, using the benzidine method of Bing and Baker[6, 7] for all estimations except early in the study in the instances referred to in the appendix. Care was taken to avoid hæmolysis in obtaining the plasma specimens and the technique of Gilligan and Blumgart[1] was followed. In Table I are listed all observations done by the benzidine method, and some of these are regrouped in Table II or shown graphically in Figs. 1 and 2. Plasma hæmoglobin values up to 40.3 mgm. % after exertion and resting values from 3.2 mgm. % to 6.5 mgm. % were found. Hæmoglobinuria occurred with plasma hæmoglobin values of 20.7 mgm. % and over (Table II), so that the renal threshold in this case is about 20 mgm. %.

The amount of hæmoglobin excreted in the urine was usually found to be considerably less and never greater than 19%, assuming a total blood plasma volume of 3,000 c.c. and assuming all the hæmoglobin involved to be represented by the value in the plasma at the end of the exertion. The hæmoglobin excretion in the urine usually ended before two hours and always before three hours. The calculated total amount of whole blood represented by the plasma hæmoglobin in solution was always small, varying from 4 to 8 c.c. where hæmoglobinuria occurred (Table II). These findings approximate those of Gilligan and Blumgart, who found, however, some plasma hæmoglobin values representing as much as 40 c.c. of whole blood, and found no urinary excretion greater than 10%.

Fig. 1 shows the time in which hæmoglobin is cleared from the plasma in all the paroxysms that were so observed. The curves show that the plasma hæmoglobin concentration begins to fall as soon as exertion ceases (note a single observation at each of a 15-minute, 30-minute and 45-minute interval) and approaches the normal resting values in about three hours. The higher plasma hæmoglobin values have an initial greater rate of fall. These findings are similar to those of Gilligan and Blumgart and approximate findings in hæmoglobin injection experiments in normal beings.[12]

It has always been assumed that the increased plasma hæmoglobin or the hæmoglobinuria is due to active hæmolysis caused in some unknown manner during erect exertion, although, as in these cases, no contributory abnormalities of blood, urine or tissues have ever been demon-

strated. Watson and Fischer[13] suggest that such hæmoglobinuria may be "an exaggeration exemplified in certain predisposed individuals, of a more or less naturally occurring phenomenon", but they do not enlarge the concept. There is another possible source of the hæmoglobin involved that, as far as we know, has not been explored hitherto. In all individuals there is a continual destruction of senile erythrocytes, liberating hæmoglobin which is apparently rapidly taken up by the reticulo-endothelial system. That some of this hæmoglobin enters the plasma in solution in some stage of this process is suggested by resting plasma hæmoglobin values of about 5 mgm. % in normal persons.[1] In regard to the amount of hæmoglobin that could be available in this normal process no reliable estimates can be made until the normal life span of the erythrocyte is settled. The evidence on this point varies from figures of one to two weeks[8] to one hundred days,[9] though some authorities[10, 11, 14] conclude, following reviews of the literature, that the average life of the erythrocyte is about thirty days under normal conditions. If this were so, in an individual with a total blood volume of 5,000 c.c. there would be a daily destruction of about 166 c.c. Assuming this normal blood destruction to be a continuous process throughout the twenty-four hours, there would be available each hour the hæmoglobin from about 7 c.c. of whole blood. This would be sufficient to produce all the paroxysms in the present cases (Table II).

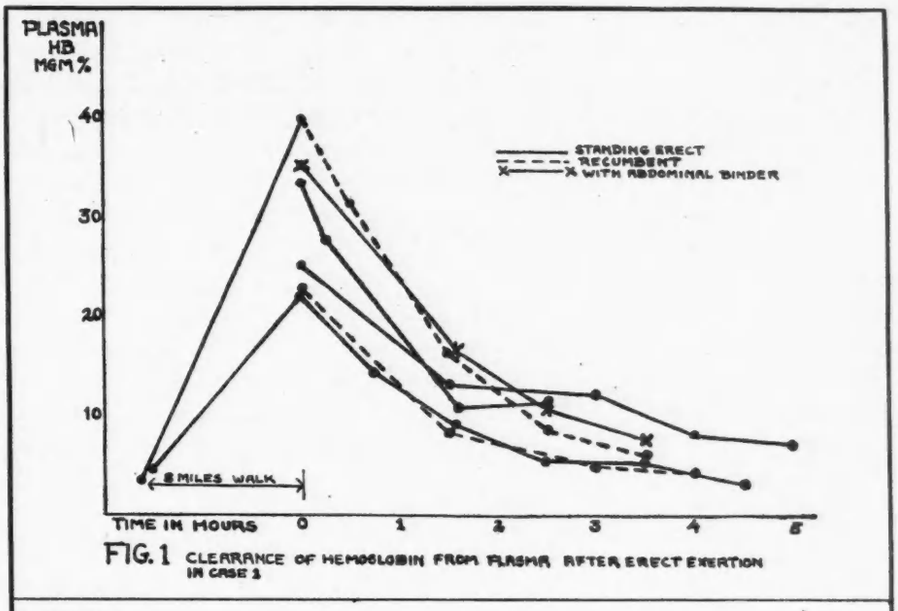

FIG. 1 CLEARANCE OF HEMOGLOBIN FROM PLASMA AFTER ERECT EXERTION IN CASE 1

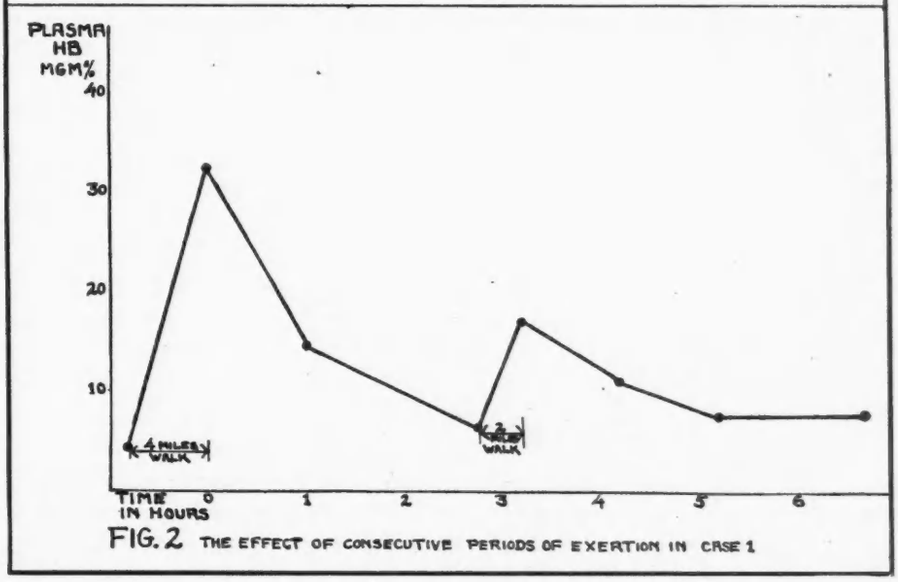

FIG. 2 THE EFFECT OF CONSECUTIVE PERIODS OF EXERTION IN CASE 1

If, as in the case of many other body processes, the rate of normal blood destruction is greater during hours of activity than at rest, this figure may be considerably higher. On the other hand if the average life of the erythrocyte is greater than thirty days these estimated figures for available hæmoglobin through such a process would be correspondingly reduced. Should the average erythrocyte span approach one hundred days the foregoing estimates would be reduced to about one-third, which would be insufficient to supply the observed paroxysms unless the amount of hæmoglobin liberated is greater at periods of increased circulatory activity than at rest.

At all events it seems possible that such a source could contribute largely, if not all, the hæmoglobin involved in the paroxysms. What occurs during erect exertion therefore may not be an active hæmolytic process but rather some

abnormality which permits the accumulation of hæmoglobin in the plasma by interfering with the removal of normally liberated hæmoglobin. Such interference could occur if a part of the circulating blood were not sufficiently exposed to the clearing mechanism, as by a diminished circulatory rate in the viscera or extremities, or, if the clearing mechanism suffered a relative failure of function, possibly by some temporary mechanical interference with the circulation of such major portions of the reticulo-endothelial system as are contained in the liver, spleen or bone marrow. If such a general concept were correct it would imply that cases of march hæmoglobinuria suffer no more hæmolysis than in normals, but that, during erect exertion plasma hæmoglobin rises, due to some interference with its normal removal.

As the urobilinogen of the stool is almost exclusively derived from hæmoglobin, and as usually less than 10% of the hæmoglobin is excreted in the urine, one would expect that a paroxysm due to increased hæmolysis would be followed by an increased stool urobilinogen output. Admittedly, episodes involving such small amounts of blood as 8 c.c. or occasionally up to 40 c.c. may require methods of stool analysis beyond the present limits of accuracy. Stool analyses were not done in our patients, though they were reported by Gilligan and Blumgart[1] who found the stool urobilinogen output within normal limits in the presence or absence of paroxysms. The range in their findings (106 to 156 mgm. of stool urobilinogen per day) is such that, apart from the fact that they are within normal limits, no conclusion can be drawn and more detailed studies are apparently necessary to determine whether significant information about the etiology of the paroxysms can be obtained from this source.

Our attempts to find evidence of such a factor as some local circulatory impairment by observing paroxysms with a tourniquet to one leg (appendix) or applying a tight abdominal binder (appendix and Fig. 1) were without result. Attempts to demonstrate some inefficiency of the reticulo-endothelial system by effecting some change in the rate of hæmoglobin clearance from the plasma were also failures. Reported attempts[1] to produce attacks by prolonged standing in the lordotic posture have been negative, but it was considered possible that after attacks posture might influence the rate at which plasma hæmoglobin is cleared. On different days paroxysms were induced in case 1 and immediately following each exertion the patient was kept either standing in a lordotic posture or put in recumbency. Fig. 1 shows the plasma hæmoglobin values obtained at the end of erect exertion and at subsequent intervals; it would appear that no significant effect of posture was demonstrated. The curves are similar to those obtained by hæmoglobin injection experiments in normal persons[12] and in the previously reported cases of march hæmoglobinuria,[1] which suggests that in these cases at rest the reticulo-endothelial system is normally efficient in this function.

However, Fig. 1 does show one feature that may be of importance, namely, the rather abrupt manner in which plasma hæmoglobin values drop following the cessation of exertion; note some of the values obtained 15, 30 and 45 minutes after the end of exertion. It is reasonable to expect that if the paroxysms were due to increased hæmolysis from some hæmolytic agent liberated during exertion there would be a period of lag following exertion during which hæmolysis would continue, as one would not expect the hæmolytic agent to disappear immediately. On the other hand, if the paroxysms are due to some mechanism which interferes with clearance of hæmoglobin from the plasma during erect exertion one would expect the interference to cease as soon as the erect exertion ended.

The effect of a second period of exertion following paroxysms was observed. It was thought possible that if the reticulo-endothelial system were in some way inefficient a paroxysm might be more easily induced near the completion of hæmoglobin clearance from an initial paroxysm. A paroxysm with a resulting plasma hæmoglobin value of 32.8 mgm. % and unmeasured hæmoglobinuria was induced by a brisk march of four miles. At the end of two hours and forty-five minutes following this, the plasma hæmoglobin value had dropped to 6.7 mgm. % and the urine was clear. The patient was then sent on a brisk march of two miles with a resulting plasma hæmoglobin value of 17.2 mgm. % without hæmoglobinuria (see Table II). The plasma hæmoglobin values are graphically shown in Fig. 2. The results from the second exertion were not materially different from those produced by similar single periods of exertion at other times (see Table I) and afforded no evidence of reticulo-endothelial inefficiency from overloading.

Finally, an opportunity arose to study the plasma hæmoglobin levels in a patient convalescing from splenectomy, following rupture of the spleen. Plasma hæmoglobin values of 3.3 mgm. % before and 3.78 mgm. % immediately after a brisk march of four miles were found, no hæmoglobinuria resulting. This indicates that the loss of such a fraction of the reticulo-endothelial system as is contained in the spleen is not sufficient, even temporarily, to impair the function of plasma hæmoglobin clearance in a normal individual.

It was planned to observe plasma hæmoglobin values at intervals during a period of exertion as it was thought likely that if the paroxysms were due to a hæmolytic process there would be a more or less continuous rise no matter how long exertion were sustained, whereas if the process was one of failure to clear normally liberated hæmoglobin there would probably be a rise to a plateau. Unfortunately, the patients entered remissions before this or other studies could be done.

In conclusion, no evidence of inefficiency of the reticulo-endothelial system, or of failure of the circulating blood to expose itself sufficiently to the action of the reticulo-endothelial system has been found. What evidence we have suggests that at least in the resting state the mechanism of plasma hæmoglobin clearance is normally active. What happens during erect exertion in these patients is still unknown.

Certain considerations lead us to believe that the hæmoglobinæmia characteristic of the paroxysms may not be due to increased hæmolysis. These are: (1) the failure of all observers to demonstrate hæmolytic agents or blood abnormalities predisposing to increased hæmolysis; (2) the amount of hæmoglobin involved in all the paroxysms in our cases and in most of the paroxysms in other reported cases could be liberated in the normal destruction of senile erythrocytes; (3) within fifteen minutes of the end of exertion producing paroxysms the plasma hæmoglobin values begin a significant drop toward the resting normal level, whereas, if some hæmolytic factor were involved one would expect a longer lag; (4) the previously reported observations on fæcal urobilinogen excretion, while not conclusive, suggest that during paroxysms there may be no increase in blood destruction.

SUMMARY

Two cases of march hæmoglobinuria are reported, in one of which some detailed observations were possible. The pathogenesis of the syndrome is still unknown, but a theory is advanced which suggests that the paroxysms are not due to increased hæmolysis but to some unknown abnormality present during erect exertion interfering with the clearing from the plasma of the hæmoglobin liberated in the normal destruction of senile erythrocytes.

The authors' grateful acknowledgments are due to Dr. E. J. King and Mr. G. E. Delory, for the spectroscopic determinations, to Major C. M. Spooner, R.C.A.M.C., for the cystoscopic studies, to Major Hughes, R.A.M.C., D.A.D.P., North Kent and Surrey Area for the Donath-Landsteiner test in Case 1, to Major Palmer Howard, R.C.A.M.C., for the vitamin C studies, to Major W. H. Mathews, R.C.A.M.C., for providing laboratory facilities, and to Captain D. A. Wanklyn, R.C.A.M.C., for providing some of the apparatus.

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APPENDIX

The following observations were done on Case 1:—

Urine test for hæmolysins.—It was considered possible that a hæmolytic substance might be concentrated in the urine despite the failure to demonstrate the presence of hæmolysins in the plasma. Urine specimens were obtained before and after a paroxysm and in several dilutions up to 1:8 in normal saline were mixed with equal parts of 5% suspension of red blood cells. The suspensions were kept in a water bath at 37° C. for two hours and then allowed to stand at room temperature for fourteen hours. No gross evidence of significant hæmolysis was observed.

Vitamin C saturation.—The finding of a low 24 hour urinary vitamin C output (4.4 mgm.) together with the report that attacks would be prevented by the administration of cevitamic acid[5] suggested the possibility that vitamin C might be a significant factor. Ascorbic acid in dosage of 600 mgm. daily was given for fourteen days at the end of which time the 24 hour urine contained 181.6 and 184 mgm. on two consecutive days. Throughout this period no change in the character of typical paroxysms was noted though hæmoglobin values in plasma and urine were not estimated.

Alkalinization of urine.—A daily dosage of 240 grains of soda bicarbonate for ten days, producing a strongly alkaline urine, was without apparent effect on the paroxysms.

Trauma test.—To investigate the possibility that the multiple minor traumata of vigorous walking might play a rôle, a crude experiment was devised in which the seated patient was passively raised and dropped to produce a bump at the rate of about 100 per minute. This was sustained for two and a half hours

without apparent gross effect on plasma or urine. The fragility of the red blood cells to trauma was found normal by Gilligan and Blumgart.[1]

Vigorous exercise in various postures.—Supervised vigorous exercise in the recumbent posture for two and a half hours was without gross effect on plasma or urine. Strenuous exercise for three and a half hours on a bicycle failed to produce hæmoglobinuria or hæmoglobinæmia, the blood plasma hæmoglobin being 5.3 mgm. % after the test. An attempt was made to determine the degree of kyphosis necessary to prevent a paroxysm, using a plaster jacket as suggested by Gilligan and Blumgart.[1] However, at the time it was done the patient was apparently entering a remission and the findings were inconclusive.

The effect of fever.—The possibility of some abnormal response to raised body temperature as a factor seem excluded by the observation in this case that induced fever of 105° for two and a half hours produced no gross changes in plasma or urine.

The effect of venous stasis.—Gilligan and Blumgart were unable to demonstrate hæmoglobinæmia in a limb which was exercised in the presence of venous stasis produced by a tourniquet. In Case 1 of our group a rubber band was applied above the left knee sufficiently tight to produce engorgement of the distal veins. A typical paroxysm was then induced and blood plasma specimens were obtained from the left antecubital vein, the right femoral vein and the left anterior tibial vein. Plasma hæmoglobin values were determined by a spectroscopic colorimeter and found to be 156 mgm. % in all. This method gives values that are considerably higher than those found by the benzidine method, and was abandoned by us. However, the identical plasma hæmoglobin values from all sources may have some significance and suggests that venous stasis is not a factor in this syndrome.

Abdominal compression.—Some intra-abdominal abnormality permitting venous stasis or interfering with the circulation in important organs as the spleen or liver, have been considered as a possible factor.[1] If so, the application of a tight abdominal binder might have some significant effect either of aggravation or amelioration. The effect of this was observed in Case 1 on several occasions without apparent effect on the degree of hæmoglobinuria as estimated crudely by the use of a Sahli hæmoglobinometer. On the one occasion in which the exact measurements of plasma and urine hæmoglobin were done by the benzidine method, no significant effect on the paroxysms was noted. See Fig. 1 and Table I.

A person with a recently acquired gonorrhœal or syphilitic infection is a most valuable public health asset. . . . Throughout our communities run the ever ramifying, ever multiplying threads of venereal infection—threads of a web, which, hidden by prudery and submerged by sophistry, catches countless men, women and children in its meshes of ill health and death. The patient with a recent venereal infection has touched that hidden net-work somewhere; that is why he is ill; that is why he is seeking help from his physician. This patient has information which can initiate action that will expose a portion of the dank mesh to the wholesome light of modern medical science and public health influence, action which will remove unsavoury community influences which make it easy for healthy persons to touch the foul web of community venereal disease—D. H. Williams: *Canad. J. Pub. Health*, 1943, **34**: 395.

INTERNAL DERANGEMENTS OF THE KNEE JOINT IN THE CANADIAN ARMY (OVERSEAS)

By Captain D. W. MacKenzie, R.C.A.M.C. and Colonel J. A. MacFarlane, R.C.A.M.C.

THE high incidence of incapacitating knee injuries among soldiers on active service led to the investigation upon which this report is based. In order to assay the results of surgical treatment and to evolve a more or less uniform policy of management for such cases, it was obvious that a thorough follow-up study should be undertaken. This task was greatly facilitated by the co-operation of the Department of Records and by the individual efforts of hospital administrative personnel and the medical officers concerned. Direct contact with most of the doubtful cases was established through the A.D.M.S., Canadian Reinforcement Units.

In the opinion of many, the advisability of operating upon soldiers because of internal derangements of their knees has been a moot point. One feels that, in this respect at least, the evidence now available justifies a more conclusive attitude in favour of surgical intervention.

Material and Follow-up

During the two and one-half year-period prior to December, 1942, internal derangements of the knee joint necessitated 463 arthrotomies in General Hospitals* of the Canadian Army (Overseas). At the time this series was reviewed, 370 cases were of sufficiently long standing to warrant assessment. Among these, 39 non-Canadian soldiers were lost to follow-up; the documents of 11 others had been returned to Canada; and 17 were not identifiable in the records. The remaining 303 provided the information which is presented in this text.

Field units yielded 77% of the operative material and Base or Reinforcement units, the balance. The postoperative follow-up period was as follows:

Duration	*Percentage*
3– 6 months	25
7–12 "	24
13–18 "	26
19–24 "	15
25–30 "	10

* The cases under consideration were treated in six Canadian General Hospitals by some two dozen general surgeons, including four orthopædic specialists.

Examination

The average age of the whole group was slightly over 28 years. The average duration of disability was 2 years and the symptoms of 23% of cases antedated enlistment.

Injury was recalled by 90%; most frequently some sort of rotational strain of the partially flexed knee, usually sustained in competitive sports. History of repeated injury, often subjectively trivial and suggestive of "locking", was given by 63%. The knees of 6 patients had been operated upon for internal derangements prior to the war.

Physical signs.—Physical examination of the knee is reported to have revealed these signs:

	Percentage
Localized ("cartilage") tenderness	72
Synovial effusion	53
Restricted range of movement	53
Thigh atrophy	35
Capsular thickening	9
Clicking	7
Loose bodies	6
Ligamentous instability	3

X-ray changes.—Records of radiological examination were available for 82% of cases. Among these, 27% revealed some abnormality of the knee joint:

	Percentage
Loose bodies	9
Irregularities of femoral condyles	6
Hypertrophic changes	5
Pellegrini-Stieda's disease	4
Chip fracture	2
Osgood-Schlatter's disease	1

Treatment

Preoperative.—If the condition of their knees permitted it, patients received preoperative instruction in quadriceps exercises.

Operative procedures.—The following surgical procedures were carried out:

	Percentage
Incision:	
Small (anterolateral)	96
Large (parapatellar)	2
Multiple	3
Meniscectomy:	
Complete	11
Subtotal	43
Fragmentary	28
Removal of loose bodies	12
Excision of redundant synovium	5
Curettage of condylar cartilage	3
Excision of fat pad	3
Repair of ligaments	1
Arthrotomy without other surgical interference	1

Postoperative care.—About one-half of the knees were immobilized on posterior moulded splints or in circular plaster for 5 to 10 days following operation. For the remainder, only pressure bandages were used.

As a rule, physiotherapy was resumed on the first or second postoperative day. Recumbent knee exercises supplemented quadriceps drill during the second week. Most of the patients were permitted limited weight-bearing late in the second or early in the third week and walked without support within three weeks. From then on they were encouraged in progressively strenuous exercise: P.T., rope skipping, bicycle riding, cross-country walks and such like.

Convalescent care.—Convalescence, following hospitalization, consisted in medically supervised, progressive reconditioning of the soldier until he was considered fit to resume his ordinary duties. Those whose progress at the Convalescent Depot was unsatisfactory were usually returned to hospital for further treatment and, when necessary, recategorization. For these reasons, 22.6% of all arthrotomies were, at one time or another, readmitted to hospital. It was found that considerably less than six months sufficed to establish the level of postoperative disability.

Surgical Pathology

The following lesions were recorded at operation:

	Percentage
Medial meniscus:	
Bucket-handle tear	33
Anterior flap tear	20
Posterior flap tear	7
Hypermobility	3
Cystic degeneration	1
Lateral meniscus:	
Bucket-handle tear	1
Anterior flap tear	4
Posterior flap tear	1
Hypermobility	0
Cystic degeneration	5
Other abnormalities (either in association with or independent of meniscus lesions):	
Serous effusion	41
Synovial thickening	20
Osteochondritis	14
Loose bodies	12
Tear of cruciate ligaments	4
Fat pad hypertrophy or fibrosis	3

Wound Healing

The following local postoperative complications were recorded:

	Percentage
Joint fluid requiring aspiration	13.5
Extra-articular wound infection	2.6
Joint infection	0.3

As more remote sequelæ, it may be noted here that 7 knees required a second operation: 4 for the removal of additional loose bodies and 3 because of residual meniscus fragments (posterior horn).

Period of Disability

The average disability period incurred was 10 weeks: hospital days, 45; convalescent days, 25.

Results of Surgical Treatment

The functional results in this series, as assessed during the month of December, 1942, were as follows:

*Category "A"**	*Percentage*
On duty in Field units	46.5
In Base or Reinforcement units	26.1
Total Category "A"	72.6
Category "B"	4.7
Category "C"	8.3
Total fit for limited service	13.0
Category "D" or "E"	7.2
Recategorized "B", "C", "D" or "E" because of disabilities in which their knees played no part	7.2

If the last section in the above table—comprising 22 patients whose categories were lowered for reasons other than their knees and whose reboard documents contain no reference to knee disability — is included in the "A" Category group, the percentage of good results rises to 79.8. (Whether or not such inference is justifiable, it is difficult to state.)

Though the follow-up period for the whole series is far short of ideal, it is interesting to record that the group observed for *more than six months* did almost as well as the above. The exclusion of 76 cases, with a follow-up interval of less than six months, altered end-results as follows:

	Percentage
Category "A"	67.4
" "B"	5.8
" "C"	9.2
" "D" or "E"	7.9
Recategorized for irrelevant reasons	9.7

Once again, if those whose categories were lowered for other reasons are included with the "A" 's, the good result percentage in cases observed for more than six months is 77.1.

Subsequent Modification of Results

When the original draft of this analysis was examined, attention was at once directed to that considerable group of cases which, though presumably Category "A", remained on the strength of Base or Reinforcement units. Were these men, in fact, fit for service in the Field or were they not? In March, 1943, after a thorough re-check examination, Canadian Reinforcement Units returned the following report on these individuals:

Category "A"	*Percentage*
Having proceeded to the Field	34
Awaiting draft to the Field	31
Permanently attached to Reinforcement Units	19
Category "B"	9
Category "C"	7

The above returns, though more satisfactory than anticipated, demonstrate that a follow-up study of this sort must be pursued beyond the scope of purely documentary evidence.

Another doubtful situation was clarified in May, 1943, when eight men, who had been protectively recategorized "C" following operation and who were considered originally as Category "C" in this survey, were re-examined. Five of them were restored to Category "A".

The accompanying Table includes the changes incidental to these more recent observations and sets forth, insofar as is feasible at the time of writing (June, 1943), the postoperative status of the series under review:

	Percentage
Category "A"	70.7
" "B"	6.6
" "C"	8.3
" "D" or "E"	7.2
Recategorized for irrelevant reasons	7.2

Meniscus Injuries

Presumed lesions of the semilunar cartilages were responsible for surgical intervention in 87% of the series. According to the record, the presence of some abnormality of the meniscus in question was confirmed at operation in 85% of these cases. Of the 39 normal menisci, 30 were excised.

For the sake of comparing results of operation, cases were grouped under the separate headings of meniscus injuries, simple and complicated. By the term "complicated", as here applied to 32% of meniscus lesions, is meant the presence of any abnormalities in addition to synovial effusion. Cases presenting osteochondritic changes, loose bodies and other internal derangements, whether or not associated with meniscus injuries, were likewise reviewed independently. In the following table, this further break-down is effected:

* For the purposes of this report, the medical categories mentioned may be defined as follows: "A"—fit for any duties in the Field; "B"—usually reserved for Lines of Communication; "C"—fit for duties in Base units only; "D"—temporarily unfit for service; and "E"—unfit for further service.

Lesion	Present Category Approximate percentages A	B	C	D or E
Medial meniscus:				
Uncomplicated	87	6	6	1
Complicated	66	6	12	16
Lateral meniscus:				
Uncomplicated	96	0	4	0
Complicated	53	11	20	16
Osteochondritis	57	2	15	26
Loose bodies	65	5	10	20
Other internal derangements	65	8	15	12

Osteochondritis

The presence of osteochondritis was recorded in 14% of all arthrotomies. The average age of those involved exceeded that of the general group by 6 months. The duration of preoperative disability was 1.6 times the average. Recollection of isolated injury was relatively infrequent. In 40%, the condition was diagnosed preoperatively by radiological evidence alone.

At operation, involvement of the medial femoral condyle was recorded in 31 cases and of the lateral, in 13. Single loose bodies were present in 15 and multiple, in 6. There were associated lesions of the medial meniscus in 17 and of the lateral, in 4 cases. Synovial thickening was noted in half the series.

Curettage of diseased condylar cartilage was performed in 10 cases. Loose bodies were removed from 21 and damaged menisci, from an equal number. Two knees were opened and closed without other surgical interference.

Though immediate postoperative complications were not remarkable and periods of hospitalization and convalescence only slightly above the general average, the results of treatment are thoroughly unsatisfactory from a military standpoint in that 26% have been returned to Canada, unfit for further service.

Loose Bodies

For the most part, loose bodies were found to have arisen from such serious internal derangements as osteochondritis and hypertrophic synovitis. Only 10% of these cases were free from some other disease of the knee joint. Their average preoperative disability period was almost four years.

Loose bodies were diagnosed preoperatively in 77% of cases: by palpation alone in 50 and by x-ray, in 60%. At operation, synovial thickening was recorded in 70 and osteochondritis, in 60%. Four required a second operation for the removal of other free fragments.

That 20% of this group were subsequently unfit for service is explained by the nature of the diseases which produced the loose bodies.

Other Internal Derangements

Tears of anterior cruciate ligaments were recorded in 11 cases which were explored for other reasons. In one instance, both cruciates had been torn. In this group, 2 patients were recategorized "E" because of knee instability; one was lowered to "C" for recurrent synovitis; and the balance remained Category "A".

Partial or complete excision of the fat pad was carried out in 8 cases. Two of these have been recategorized "B". The remainder are Category "A".

Ten cases of Pellegrini-Stieda's disease came to operation because of other internal derangements. One is now Category "B"; 2 are Category "C"; and the rest have no recorded disability.

Comment

The large number of arthrotomies performed raises the question of surgical policy and suggests a tendency towards radical treatment. In this respect, however, history of repeated injury in 63% of cases is noteworthy. The majority of knees that are referred to general hospitals present some surgical condition. They represent the filtration product of a much larger group. Just how many of them come to operation was ascertained from the experience of one 1,200-bed hospital to which, in a period of six months, there were admitted 174 cases of internal derangement of the knee. The management of this group was as follows:

	Percentage
Physiotherapy prescribed	90.2
Knees aspirated and immobilized	32.2
Arthrotomy performed	22.4

An operational incidence of 22.4% is comparable both with Graham's[4] record of the R.A.A.M.C.'s 26.3% and with Murray's[9] civilian experience of 27%. There is no reason to suppose that the figures from other Canadian military hospitals would be markedly different from the above.

That the selection of elective surgical material in military practice is fraught with peculiar difficulties is a fact that need only be recalled to emphasize the importance of accurate diagnosis and preoperative assessment in every case. The signs and symptoms of

common ailments are frequently discussed among the troops. For those whose preoccupation is physical disability, no leading question is necessary to suggest, for example, recurrent "locking" of the knee. Awareness of this possibility, however, should not lessen the need for careful history taking. More often than not, the mechanism of injury is an invaluable guide to diagnosis.

The prognostic significance of age is shown by the fact that, among those over thirty, the percentage requiring postoperative recategorization was half as large again as it was for the younger group. The duration of disability of those subsequently recategorized was one-third longer than average.

Recorded physical signs are of interest chiefly in demonstrating the individual tendencies of each observer. The fallacy of purely documentary evidence is obvious in the case of quadriceps atrophy. In all probability, this important sign was present and observed in more than twice the recorded number (35%) of cases; for internal derangements of the knee joint without muscle wasting are of little functional significance.

The need for preoperative radiological examination is apparent in the observation that, all lesions considered, the percentage of patients postoperatively unfit for service in the group with abnormal x-ray findings was almost *five times* greater than it was among those whose x-rays were negative.

Given a history suggestive of torn meniscus, a similarly indicative physical examination and negative x-rays, should one decide to operate at once? An answer is provided by Murray's[9] experience with 631 cases of what he considered to be certain meniscus injuries. Murray believes that, when the meniscus has been torn from its ligamentous, lateral attachment, it will often heal if treated conservatively; that tears of the cartilage itself will not heal; but that these lesions cannot be differentiated clinically. He therefore immobilized in extension for four weeks almost every case of first injury. In a subsequent follow-up period of 2 to 5 years, 316 of the cases thus treated recovered completely and remained cured. Murray concluded, with complete justification one feels, that, regardless of the signs and symptoms, the only primary meniscus injuries that should be operated upon without delay are those few cases of "locked" knee which resist reduction under anæsthesia. In the army, where medical advice is readily available to all and far more frequently sought after than in civil life, the chapters on original injury and recurrent disability are frequently complete and satisfactorily authenticated when the patient arrives in hospital. In many cases, however, the first injury is recent or there is reasonable doubt concerning the history. If, in this group, the factors of diagnostic error and spontaneous healing are weighed together against the advisability of operation, fewer knee joints will be needlessly explored. Experience of the past thirty years abundantly supports the policy adopted by Sir Robert Jones[6] who, in 1909, wrote as follows:

> "I refuse to operate in any case I see early, the subject of a first derangement. I discourage operation in those recurrent cases where the symptoms are transient and not followed by irritation of the joint. I strongly urge operation in those cases where a recurrent displacement is at times followed by acute symptoms. I advise it in all recurrent cases where a strenuous athletic life is a means of livelihood or a physical necessity."

The value of preoperative instruction in quadriceps exercises is great. Postoperative re-education is facilitated by developing the habit of tonic contraction before surgical intervention inhibits muscular co-ordination.

This series of internal derangements cannot be subdivided for purposes of contrasting the various methods of exposing the knee joint. Small, anterolateral incisions were the rule (96%). That they sufficed is suggested by the fact that multiple approaches were necessary in only 2.9% and that, of the seven cases requiring a second operation, only three yielded residual meniscus fragments. Darrach[3] and Murray[9] make routine use of the large, parapatellar incision, because of their observation that some other complication is present in 70% of cases and that three or more pathological changes are found in 35%. In our experience, single complications were noted in 65% and multiple abnormalities in 24%. That more extensive exploration would have greatly improved the prognosis in cases of complicated internal derangement one is therefore inclined to doubt.

It is unfortunate that the occasional removal of a normal meniscus is unavoidable. The argument that this procedure does little if any harm and that exploration *per se* may reveal other correctible changes within the joint is cold consolation for the diagnostic error. In this series,

the 15% of incorrectly supposed meniscus lesions does not exceed the mean obtained from the independent records of Bristow,[1] Henderson[5] and Jones.[6] When doubtful cases require exploration, it would appear advisable that the incision should provide sufficient visualization to exclude meddlesome surgery.

Recorded operative findings were essentially similar in type and incidence to those previously described in other environments. The surgical procedures employed were in accord with previously established custom. In view of the results obtained, partial excision of the semilunar cartilages seems to be justified. This has been accepted as adequate by Bristow,[1] Steindler[10] and others. Cantlie[2] and Malkin[8] believe that the whole cartilage should be removed routinely. This procedure, however, cannot be accomplished through a small, anterolateral incision unless the collateral ligaments are excessively lax. Of Bristow's 629, only three cases required subsequent removal of the posterior horn. In our own series, an equal number have been thus far similarly disabled.

Whether or not postoperative immobilization of the knee should be advised is debatable. Immobilization, generally speaking lessens discomfort. One might overlook this factor if functional rehabilitation was thereby impaired. As recorded above, about one-half the knees in this series were completely immobilized for 5 to 10 days. In the Middle East, Graham's[4] cases walked on the third or fourth postoperative day. Comparing the results, Graham's hospital days were 2.5 less, his convalescent days, 7.5 more than ours. It is likely that immobilization of the knee by means of a light, padded, circular plaster on top of the usual pressure dressing, decreases the incidence of postoperative effusion and hæmarthrosis. Against such treatment, then, is the cost of the material and the time consumed in applying it.

Wound-healing complications were not excessive. The figure (13.5%) for postoperative aspiration means little: some remove these effusions, some do not. While fluid is essentially a corollary of inadequate muscular development and as such indicates increased exercise rather than rest, the more conservative agree that exercises should be carried out in recumbency until the effusion is on the wane. Extra-articular wound infections were uniformly trivial; nevertheless, 2.6% of even superficial infection in clean wounds is too high. The single instance of joint infection was not serious. After a prolonged convalescence, the patient returned to duty, Category "A".

As recently emphasized by Malkin,[8] the final reconditioning of knee cases is a problem of some magnitude. The initial stages are successfully accomplished in hospital; but that last half-inch of thigh atrophy, it seems, can be abolished only by a regimen of progressively strenuous exertion such as a hospital is not equipped to provide. Our Convalescent Depot went far towards compensating this deficiency; but the real answer, it is hoped, will be provided by the recently established Convalescent Hospital, which can take charge of the knees from their third postoperative week.

The follow-up on this series of arthrotomies is encouraging and compares favourably with previously recorded civilian and military experience; for example:

Source	*Percentage results* *Good*	*Fair*	*Poor*	
Cantlie (R.A.M.C.)	63	25	12	83 cases
Henderson (civilian)	77	14	9	298 cases
Malkin (service patients) .	64	26	10	86 cases
Steindler (civilian)	77	15	8	86 cases
Average	70	20	10	
R.C.A.M.C.	71	22*	7	

Graham's[4] report for the R.A.A.M.C. in the Middle East shows equally satisfactory results, though his figures were published too early to be strictly comparable with the above.

From the army's viewpoint, it is doubtful that the results of surgical treatment can be improved in cases of osteochondritis. For this reason one feels that, under conditions of active service, operation should be avoided except for the small number in which concomitant loose bodies interfere with the movements of the joint. With the aid of x-rays alone, it should be possible to exclude the majority from operation and certainly to refrain from operating upon many of them because of indefinite meniscus lesions.

As a group, the cases of loose body were almost equally unsatisfactory and, to their management, the conclusions concerning osteochondritis similarly apply. It is most unusual to find a loose body in an otherwise normal knee. In 35% of cases there is radiological

* This figure includes the 7.2% of cases which were recategorized for reasons other than knee disability.

evidence of osteochondritis. In an additional 25% such changes are recorded at operation. With the inevitable prognosis in mind, the search for loose bodies will be further restricted to those few cases in which the fragment produces the disease.

Concerning other internal derangements, the record of this series contributes little. As a rule, their presence adversely affects the prognosis following meniscectomy: frequently to an unforeseen degree. Early recognition of the complicated internal derangement is therefore of prime importance to the management of the case.

SUMMARY AND CONCLUSIONS

Among Canadian soldiers on active service, the results of meniscectomy have been satisfactory.

Findings, clinical and pathological, surgical technique, pre- and post-operative care and period of disability closely parallel civilian custom and experience of the past decade. They likewise support the observations of R.A.M.C. and R.A.A.M.C. observers, whose contemporary management of service patients has met with similar success.

Though the record is favourable, care in diagnosis and surgical conservatism cannot be over-emphasized. In addition to such significant factors as age, mechanism of injury, character and duration of disability, available data lends support to the following considerations; that: (1) No single sign or symptom is pathognomonic of meniscus lesions. (2) No examination of the knee is complete without an x-ray. (3) At best, there is a not inconsiderable factor of error in the diagnosis of meniscus lesions. For this reason, together with the probability of spontaneous healing in a large proportion of detachments, operation following first injury is ill advised, except for that small percentage of cases in which the locked knee resists reduction under anæsthesia.

4. Preoperative exercise instruction is an important precursor of rehabilitation.

5. Small incisions and subtotal meniscectomy usually suffice.

6. Postoperative immobilization of the knee has no apparent influence upon end results.

7. In most instances, the presence of osteochondritis should be diagnosed before operation and considered a contraindication to surgery, except when sequestra interfere with the movements of the joint.

8. Their etiology in particular should govern the management of loose bodies.

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RÉSUMÉ

Le présent travail a été rédigé après étude soignée de 303 malades de l'armée canadienne, suivis assez longtemps pour pouvoir se faire une opinion sérieuse. En général, on peut affirmer que les résultats de la résection des ménisques a donné des résultats satisfaisants. La symptômatologie, les constatations anatomopathologiques, la technique, les soins, et le pourcentage d'invalidité ne diffèrent guère de ce qui se passe dans la pratique civile. En dehors des données spéciales provenant de l'âge, du mécanisme du traumatisme, du caractère et de la durée de l'invalidité, l'observateur notera encore les remarques suivantes qui sont à la fois des guides et des conseils: il n'existe pas de signe pathognomonique de lésion méniscale. L'examen du genou n'est pas complet sans radiographie. Les causes d'erreur sont nombreuses et la décision d'opérer ne doit être prise qu'après certitude absolue de son indication. Dès avant l'opération, le sujet doit être au courant du genre d'exercices qu'il devra accomplir. Le plus souvent, les résections partielles suffisent. L'immobilisation post-opératoire n'influence pas les résultats terminaux. Il importe de bien connaître la concomitance de l'ostéochondrite car elle contre-indique l'opération, sauf dans les cas où un séquestre s'oppose à la mobilisation du genou. En général, toute substance fragmentée et libre intra-articulaire sera traitée en rapport avec son étiologie et sa provenance. JEAN SAUCIER

INTRAVENOUS NOVOCAINE FOR ANALGESIA IN BURNS

(A Preliminary Report)

By Major R. A. Gordon, R.C.A.M.C.

INTRAVENOUS administration of local anæsthetic agents was first advocated by August Bier, of Bonn, Germany, in 1909. In Bier's technique the blood was expelled from the extremity to be anæsthetized by the application of an Esmarch bandage, and a tourniquet was then applied to prevent the re-entry of blood. The anæsthetic agent was injected into the veins of the extremity, and was prevented by the tourniquet from escaping into the general circulation. The injection of local anæsthetic agents into the arteries of an extremity was first practised clinically by Goyanes, in Spain, in 1908.

In December, 1942, it was brought to my attention by Lt.-Colonel R. M. Tovell,[2] of the Medical Corps of the U.S. Army, that Dr. J. S.

Lundy[1] had successfully used intravenous novocaine to provide relief for patients suffering from pruritus associated with jaundice. The question arose as to whether the procedure might be of value in relieving pain associated with burns, and so to provide adequate analgesia for transportation and for dressings.

Since that time I have used intravenous novocaine in ten patients with burns of varying extent. In three of these cases one gram of novocaine crystals was added to one litre of saline and administered by an intravenous drip over a period of one hour to one and a half hours. It was considered advisable, if possible, to reduce the amount of saline given, and accordingly in the remaining seven cases the same amount of novocaine was administered in 500 c.c. of saline solution containing 5 or 10% glucose. In each case we have had significant relief of pain within a few minutes of commencing the infusion, with no sign of any untoward reaction in any case. Urinary function has been followed up, and has shown no change.

In the first three cases the infusion was commenced after the dressing had been started, in order that it might be confirmed that the procedure was painful, and that the degree of pain might be gauged as accurately as possible. Relief of pain was remarked by all three patients within a few minutes of beginning the infusion. It was then considered that further patients should be given the benefit of analgesia before the dressing was started, and in the remaining cases the infusion was allowed to run at least ten minutes before the dressing was commenced. In no case was morphia administered after admission, and in no case had morphia been administered more recently than four hours before dressing.

CASE 1

A patient with uniform partial loss of skin on the dorsum of the left hand, and lower part of left forearm. Dressing on the day following the burn produced severe pain. With the hand exposed to the air the patient complained bitterly of pain and could not be persuaded to attempt flexion of the fingers. Infusion was started at this point, and 200 c.c. of 0.1% novocaine were given in the first five minutes. At this time the patient informed us that the pain had almost entirely gone, and with the hand exposed to the air, he made a fist without discomfort. The infusion was discontinued after 0.6 grm. had been given, and relief of pain continued for about six hours. Blood pressure and pulse rate were unchanged.

CASE 2

Patient with partial skin loss due to burns of both hands and forearms. At the original dressing the right hand and forearm had a pressure dressing applied, and were then enclosed in plaster of Paris. The left hand and forearm were dressed with tulle gras, sulfathiazole emulsion and saline compresses. On the day following the burn the left arm was still œdematous, and considerable quantities of plasma were being lost from the surface. Exposure to the air caused severe pain. The extremity was therefore covered with a loose temporary dressing, and intravenous infusion of 0.1% in saline was started. Fifteen minutes after the infusion had started about 200 c.c. had been given, and the patient volunteered that the left hand and arm were "getting numb". The dressing was continued with little discomfort. Blood pressure and pulse rate were unchanged.

It was interesting to note in this patient that there was no sensation of numbness in the hand and arm which had been in the pressure dressing and undisturbed. It is thought probable that leakage of plasma into the tissues and from the surface had been checked in this arm and hand by the undisturbed pressure dressing, so that the novocaine did not get into the tissues in significant amounts. Plasma leakage into the tissues and on to the surface of the left hand and arm carried with it sufficient novocain to produce adequate concentration for a local analgesic effect.

CASE 3

A patient with partial loss of skin of the dorsum of the right hand and lower part of forearm, face, and sides of neck to collar line. He complained bitterly of pain when removal of dead skin commenced. Infusion of novocaine 0.1% in normal saline started as soon as pain was confirmed. Within five minutes, 150 c.c. having been administered, the patient volunteered that pain had disappeared, although he still felt the dead skin being stripped from the hand. At the end of twenty minutes, 300 c.c. having been administered, the patient volunteered that both the hand and forearm and the face were numb. There was no anæsthesia of any part outside the burned area. At this time there was a noticeable increase in œdema of both hands and face. The infusion was continued until 1.0 grm. of novocaine had been given, over a period of one and a half hours. The hand and face continued numb for approximately sixteen hours, during which time the patient had a normal night and sleep. Blood pressure and pulse rate were unchanged.

CASE 4

A patient with areas of partial and complete skin loss involving the face, both hands, and lower part of right forearm. This was a phosphorus burn which had remained untreated for seven hours before admission. Infusion of novocaine 0.2% in saline containing 10% glucose was commenced ten minutes before dressing. Dressing commenced when the patient volunteered that the burning pain had ceased. At this time 60 c.c. had been administered.

Dressing included scrubbing of the burns of the hands and forearms with gauze and with a brush to remove particles of phosphorus, and scraping of areas of partial skin loss with the edge of a thumb forceps. This caused no discomfort except when the flexor creases of the first hand were scrubbed. At this time the rate of flow of novocaine was increased, and no pain was experienced when the other hand was similarly treated. No pain was experienced during similar treatment of the face, except at the inner canthus of each eye, where the burns extended into subcutaneous structures, and where pain was produced by pressure. Blood pressure and pulse rate were unchanged.

CASE 5

A patient with areas of partial and complete loss of skin involving the face, neck, both arms and forearms, both legs and thighs, and small areas on the back. Burned by phosphorus and gun-powder flash six hours before admission; considerable œdema; moderate pain. Infusion of novocaine 0.2% in 5% glucose in saline, 300 c.c. was given over a period of forty minutes before cleansing was started, at which time he vol-

unteered that he had "pins and needles" sensation in his hands, but that the pain had ceased. The pulse rate had not altered. During the process of cleansing, the burned areas were subjected to vigorous scrubbing in some areas with gauze and a stiff brush, to remove particles of phosphorus.

This patient had a slight rigor at the end of forty-five minutes in the operating theatre, at which time pulse rate increased from the previous 90 to 120 per minute. It was felt that this rigor was due to prolonged exposure of extensive burns, rather than to the infusion. Blood pressures could not be recorded due to the extent and situation of the burns. When questioned on the following day this patient stated that he had felt very little discomfort during the dressing, and what pain he had felt had been quite tolerable. He had had a comfortable night.

CASE 6

A patient with areas of complete and partial loss of skin involving both arms and small areas on the back and thighs. There was moderate œdema. This was a mixed phosphorus and flash burn. There was moderate pain. Infusion of novocaine 0.2% in 5% solution of glucose in saline, was commenced at admission; 400 c.c. were given in forty minutes before dressing was commenced, and a further 100 c.c. during the course of the dressing. On admission to the operating theatre the pulse rate increased from 80 to 104 per minute, but quickly returned to 86. This was attributed to excitement. The cleansing of the burns included vigorous scrubbing with gauze, and caused no discomfort. There was no further alteration in pulse rate. Blood pressure was not taken because of the situation of the burns. A total of 500 c.c. (1 grm. novocaine) was given in a period of 1 hour. Pain was returning 12 hours later.

CASE 7

A patient with areas of complete and partial loss of skin due to burning by phosphorus and gunpowder flash. The burns involved the face, neck, both arms (patchy), and forearms, left leg, and very small areas about the right knee. Infusion of novocaine 0.2% in 5% glucose solution in saline, was commenced 50 minutes before dressing; 300 c.c. had been given when the dressing commenced, and pain had ceased. Cleansing of the burn involved scrubbing of all areas with gauze to remove phosphorus particles, and there was no complaint of pain. The pulse rate and blood pressure remained unchanged. A total of 500 c.c. (1 grm. novocaine) was given in 70 minutes. There was some burning pain when the burns were exposed to air 12 hours later.

CASE 8

A patient with areas of partial and complete loss of skin following phosphorus burns. These burns involved both hands and forearms, scalp, neck and left leg. Infusion of novocaine, 0.2% in 5% solution of glucose in normal saline, was started at admission; 300 c.c. of this infusion were administered in 65 minutes. At this time the infusion stopped, and as analgesia appeared to be adequate it was not restarted. Dressing of the burns was commenced at this time. Cleansing involved some scrubbing with a brush to remove phosphorus particles, and this caused only very minor discomfort. There was no alteration in rate or volume of pulse throughout. Total amount of novocaine given was 0.6 grm. There was a return of slight burning pain 12 hours later.

CASE 9

A patient with small areas of partial and complete loss of skin involving scalp, face, both forearms and hands, due to phosphorus burns. Infusion of novocaine, 0.2%, in a solution of glucose 5% in normal saline, was started shortly after admission. The patient was nervous and apprehensive. Three hundred c.c. were given during 75 minutes before dressing was commenced. Pain was abolished. There was slight discomfort only on vigorous cleansing of one hand, but definite pain was experienced when the palmar surface of the second hand was cleansed. This pain was described as "far from intolerable". Total novocaine 1 grm. Comfortable 12 hours later.

CASE 10

A patient with numerous small burns due to phosphorus. These were distributed over the face, scalp, both hands, left elbow, right leg, and the involved areas showed both partial and complete loss of skin. Infusion of novocaine, 0.2% in solution of glucose 10% in saline, was started on admission. Inspection, cleansing and dressing of the burns was commenced 10 minutes later, at which time 150 c.c. had been given. Cleaning included washing with gauze, and some scraping, to remove phosphorus particles. There was no pain whatever. Blood pressure and pulse rate remained normal. Total novocaine 1 grm.

DISCUSSION

The production of analgesia in burns, especially during the period of transportation to hospital and the first dressing, is a problem of considerable importance, especially in the case of service burns, which may have to be transported over considerable distances, during fairly long periods of time, on stretchers and in vehicles which, at the best, are uncomfortable. The pain occasioned by such transportation may cause extreme exhaustion, which contributes to the development of shock.

Many attempts have been made within the last few years to produce analgesia in burns by the local application of various substances to the burned area. Some of these have met some measure of success, but all have suffered from the defect of being inefficient or ineffective before the burn has been debrided. This limits the usefulness of these methods in that period when analgesia is most urgently required, *i.e.*, during the period of removal to hospital and the first dressing. Furthermore, after the debridement of the burn has been completed, it is impossible to control the amount of the local anæsthetic substance which may be absorbed from the burned surface.

Of the cases reported above, seven were dressed at night, and in each case the patient had a normal night's sleep without pain, and without the administration of any sedative drug. All patients were alert and co-operative during dressings.

Lundy has conclusively demonstrated the safety of intravenous injection of dilute solutions of novocaine. We have demonstrated its effectiveness in producing analgesia in recent burns in the cases quoted above. Given by the technique which we have used in these cases it has a selective and rapid action on the burned areas.

I wish to express my appreciation to Lt.-Colonel S. D. Gordon, R.C.A.M.C. and Dr. R. P. W. Shackleton of the Emergency Medical Service (England) for co-operation which has made this investigation possible, and to Lt.-Colonel R. M. Tovell, Medical Corps, U.S.A., who first drew my attention to Dr. Lundy's work, and aroused my interest in its possibilities in burns.

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RÉSUMÉ

L'injection d'une solution à 0.2 gm. % de cristaux de novocaine dans du sérum physiologique salé contenant 5 à 10% de glucose et administrée par le goutte à goutte intraveineux supprime le douleur chez les brûlés et permet ainsi la mise en œuvre du débridement et des premiers soins. Les quantités injectées varient entre 60 c.c. et 500 c.c. L'action de la novocaine dure de 2 à 12 heures. Cette méthode n'a pas provoqué de réactions fâcheuses chez 10 malades.

JEAN SAUCIER

THE EVACUATION OF CRETE, 1941

By Surgeon-Lieutenant Murdo McRitchie, R.C.N.V.R.

WE arrived at Suda Bay, in Crete, May 8, and immediately went about setting up our tented hospital and operating theatre. We had everything shipshape in about three days. The Commanding Officer of our unit was Surgeon-Commander L. G. Yendoll, R.N., and under him were eight Surgeon Lieutenants, two Chief Petty Officers, four Petty Officers and 32 Sick Berth Attendants. By the time we were finished we had an excellent 60-bed hospital.

Monday morning, May 20, the invasion of the island by the Germans had begun. I'll never forget it. We were all at breakfast when the planes came over. The sky was fairly blackened out with their numbers. Parachutists were dropping everywhere. They had it down to a science. First of all the Jerry fighters came over, straffing and bombing our gun emplacements which were rolling thunder into the skies.

One by one we watched our guns being put out of action. The method was simple. The fighters would make the guns' crews seek shelter and would keep on worrying them like gigantic steel moths about a flame. Then the gliders would wing in and disgorge crews which would take over the guns themselves.

By the end of the first week our 60-bed hospital was attempting to accommodate 450 cases. We had them sleeping under the olive trees and in stretchers and in the semi-protection of a nearby monastery. Of course, we kept the more serious cases under the hospital tent. Things went from bad to worse. When we started our position was about a mile behind the Allied line south of Canea. Suddenly, however, our forces started withdrawing through our hospital in a retreat to Suda Bay. It was a shambles.

In the hospital we were working far past the point of exhaustion. We worked in relays of threes. One would operate and one would administer the anæsthetic. Our patients were the saving grace at all times. Never once did they grumble at anything. They were all representative of the men in front lines, boys of the B.E.F., of Australia, of New Zealand, the Royal Marines, Greek soldiers and Greek civilians. We even had a couple of German prisoners. There was no sleep, no rest, nothing but work.

In that inferno everything passed for all of us like a dream. I never quite knew or realized whether it was day or night. The planes came over all the time. The bombs were falling and the machine-gunning was almost continuous. I remember one incident particularly well.

We were operating at the time. The patient was under the anæsthetic. All was going quite well until a trench mortar landed close by and put the whole lighting system out of order. Fortunately it was daytime. While everything was heaving and swaying about us like mad we picked up our unconscious patient, laid him on the floor and continued with the operation. It was a nightmare.

Commander Yendoll realized things couldn't go on like this, just as we all did. He sent back to Suda Bay for instruction to remain or evacuate. The command came back to move out without loss of time as the Germans were right behind our own troops. We had no idea we were evacuating the Island of Crete itself. We thought we were completing a temporary withdrawal and would then advance and push the Germans back.

About midnight, May 28, we started to clear all casualties from our hospital to the army hospital about 12 miles east of Suda Bay. The ambulances worked in relays between our hospital and the military hospital, carrying stretcher cases only. By 0400, we had the entire hospital evacuated, except for nine stretcher cases. There was no sign of any further ambulances.

Of our original staff only 16 were left. We had drawn lots to see who would remain behind

to be captured. All the Medical Officers and Sick Berth Attendants had volunteered for this job but the C.O. had ordered two-thirds of the S.B.A.'s to carry on along with the wounded.

At that time we were literally in no man's land. Our own lines had fallen away in front of the enemy advance. At 0400 we left our two German prisoners and between us picked up the 9 stretcher cases and struggled down the shell and bomb-pocked road, hugging the protecting foliage of the olive trees. Within the next few days these trees were to become our best friends.

For over two miles we trudged in this manner before we met other ambulances. I was never so tired or frightened in my life. But the work wasn't over then. The ambulances were full and two of our stretcher cases were out of luck. Commander Yendoll, two S.B.A.'s, and myself remained behind. After a spot of rest, we picked up the stretchers and continued our safari towards Suda. By this time it was light and enemy planes were everywhere. Every now and then we would see them and scoot for the protection of the olive trees. We worked out a system. The planes would come swooping down low over the trees and we soon learned to put the trunk between us and the machine-guns; then, as the plane roared by, its guns yammering away, we would dive around to the other side of the trunk as the rear gunner let fly.

At about 0800, just when none of us thought we could take another step, we met another ambulance which took over our last two casualties. The wounded men were Maoris of New-Zealand, and I've never seen more guts displayed by any men. Not once did they complain throughout that hideous, nerve-racking journey.

Finally we came to the Army Hospital, and turned over the two Maoris. The hospital was a large stone house taken over when the British first landed in Crete. Here again the skies were full of planes. I watched them dive on the hospital with their machine-guns flaming. As soon as they saw the cross their guns immediately ceased fire and their signal lamps blinked back that they had recognized it. They never attacked the hospital as far as I could see, which was just as well, as the yard was overflowing with casualties.

There I think, came our greatest disappointment. We were thinking that the worst part of our trek was over. Instead, however, we were told at the hospital we would have to proceed to the south coast of the island if we were to be evacuated—a jaunt of about 40 miles. For the first time we realized our position and that the Allies were beaten and evacuating.

Fortunately, we got transportation with an ambulance train for most of the way. It was a nightmare. We could only travel by night, as by day it was death to be on the roads. During the day we hid in the rocks or lay beneath the olive trees. All through the journey we were picking up casualties along the road. Everywhere was death and desolation. Imprinted on my mind forever is the memory of one town we passed through. We could see nothing but flames in the night. Not a chimney remained standing. Over all hung a pall of dense smoke and an unforgettable smell.

With about ten miles still to go the road came to a sudden halt, and we all realized from there on it was shank's mare or nothing. We left the ambulances and trucks where they were on the road and removed all casualties. We were sitting in the rocks below the road which ran along the side of a hill, eating bully beef and biscuits and cursing our thirst which was getting us all down. Suddenly there was a great whir and two large German coastal patrol bombers floated down on us with their motors cut.

It was too late to run for cover. We just stood there motionless, as if we were playing a game of "statues". There was a "crumph-crumph" and our line of ambulances above was a blazing mass. It was one of the neatest bits of bombing I ever witnessed.

After that we remained in the rocks all day. But with nightfall we proceeded towards the town of Sphakia and there, about midnight, we saw a tiny signal flash out at sea. This was returned by a member of the naval personnel on shore. Two British destroyers, *H.M.S. Napier* and *H.M.S. Nizam* moved in in answer to the signal, and the evacuation commenced.

First of all we sent our casualties out to them and then our hospital units. I found myself aboard the *Napier* and it was a lease on life. We sent the destroyer's boats back to evacuate the soldiers stranded on the shore. In all we took on about 600. That was the night of the 30th. The evacuation commenced at midnight, and the deadline was 0300, but so quickly and efficiently was the manœuvre carried out that the captain delayed an additional twenty minutes to take more on board. This was just as

well, as it was the second to the last of any Allied ships to go in.

The crew of our ship was partly British and partly Australian. They served sandwiches and tea to us and I think it was, without doubt, the best meal any of us ever had or ever will have. Dawn found me sleeping in the chief engineer's cabin, which was just below the high angle gun. It was pumping away for all it was worth. We were under attack again. After two near misses for us, and a lot of broken crockery for the *Nizam*, we finally reached Alexandria. All I had left to remember Crete by was a flood of memories, a pair of shorts, a pair of shoes and a cap—just what I was wearing.

GOLD THERAPY IN RHEUMATOID ARTHRITIS*

By Surgeon Lieutenant Commander J. W. Graham, M.D. and A. A. Fletcher, M.D.

Toronto

WHEN to advise gold therapy for rheumatoid arthritis continues to be a problem for those concerned with the management of this disease. Many believe it to be the most effective single measure now available, while others feel that, because of the serious intolerance to gold shown by many arthritic patients, its use is largely contraindicated. It is not a new drug: its antibacterial properties were demonstrated by Feldt as early as 1914, and in 1924 its use in the treatment of pulmonary tuberculosis was reported by Mollgaard. Reports of the value of gold salts in rheumatoid arthritis appeared in the European literature in 1927, and in 1935 Forestier[1] published an analysis of some 550 treated cases.

By this time an extensive literature in France, Germany and the Scandinavian countries indicated considerable experience with gold therapy. Forestier stated that between 70 and 80% of his cases responded favourably to treatment; 50% of recent cases and 20 to 30% of cases of two or more years' duration apparently were cured. He described the toxic reactions observed in his series of cases and discussed their recognition and prevention. He was among the first to emphasize the significance of the erythrocyte sedimentation rate as an indication both for beginning and for maintaining treatment with gold.

In England reports on treatment of rheumatoid arthritis with gold salts began to appear in 1935. Two years later Hartfall, Garland and Goldie[2] reported their investigations on 900 cases of arthritis, 750 of them being cases of rheumatoid arthritis. Apparent cure or striking improvement occurred in 80% of the cases of rheumatoid arthritis. However, their mortality rate was disturbing: deaths apparently due to the administration of gold were 0.78% as a minimum and 1.1% as a maximum, according to the interpretation of deaths of uncertain origin. Subsequently, Ellman, Lawrence and Thorold[3] carried out a series of carefully controlled observations and provided definite evidence of the beneficial effect of gold salts upon the course of rheumatoid arthritis. Further, they showed that both the efficacy and the toxicity of the drug varied directly with the amount administered.

In the United States gold therapy was viewed with scepticism for some years but recently many investigators have reported favourable results in the treatment of rheumatoid (atrophic) arthritis with gold salts. In 1939 Key and his associates[4] expressed the opinion that gold therapy definitely ameliorates the course of the disease in the majority of cases. Cecil, Kammerer, and de Prume,[5] in 1941 reviewed their studies of 235 patients; 66% of this series showed remission or great improvement and another 19% were moderately improved. They concluded that gold is the best single agent for the treatment of rheumatoid arthritis, but that it is a dangerous drug. Similar views were expressed by Dawson, Boots and Tyson[6] in their report of 100 cases treated at the Presbyterian Hospital, New York.

In Canada, Bagnall[7] expressed his encouragement after two years' experience, when he opened a discussion on aurotherapy before the Canadian Rheumatic Disease Association. He reserves its use largely for the more severe and stubborn cases.

Since 1938 gold salts have been in continuous use for the treatment of rheumatoid arthritis at the Toronto General Hospital, and the present report comprises a study of the first 100 cases

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in which this measure was undertaken.* The series includes a few ambulatory cases, but the majority were patients admitted to hospital suffering from arthritis of more than average severity, most of them presenting a picture of active and advanced multiple joint involvement.

METHOD OF TREATMENT

An attempt was made to provide some measure of medical care and protection to all patients during treatment and for some time afterwards. As most of the patients were in hospital, opportunity was provided to study each case and observe the reaction to bed rest and institutional supervision. Early recognition of toxic reactions was much facilitated and, we believe, the susceptibility to relapse was substantially less if the patient went on to a fair convalescence before discharge from hospital.

All patients were treated with gold sodium thiomalate (myochrysine), an aqueous solution containing 50% metallic gold, which was injected intramuscularly. Two small initial doses were given, a week apart, to detect idiosyncrasy: the first dose was 0.01 grm.; the second, 0.05 grm. Following these preliminary injections, doses of 0.10 grm. were given at intervals of one week for ten weeks. This constituted a course of treatment. Decision as to further courses of treatment depended upon the clinical result and the sedimentation rate. Two or even three courses of gold treatment are sometimes required to ensure maximum benefit, but before commencing a second or third course a rest period of six to twelve weeks should be allowed as the metal is excreted very slowly.

In our series a few patients received 2.0 grm. of gold over a period of eleven weeks, but the majority were given 1.06 grm. according to the schedule outlined above. A study of the results obtained by the larger dosage did not appear to warrant the additional risk involved.

TOXIC REACTIONS

It is unfortunate that the toxic dose of gold appears to be very close to the effective therapeutic dose. It is probable that there is no drug in use today which causes such a high incidence of toxic manifestations. Our experience has been similar to that of other observers who report some complication in over 50% of their patients. Although the majority are mild, very severe and even fatal reactions do occur. There were no deaths in our series.

Toxic manifestations involving the mucous membranes, skin, gastrointestinal tract, kidneys, hæmatopoietic and central nervous systems, occurred in 54% of our cases (Table I). It would appear that reactions are most likely to occur during the first half of the course of treatment and, in some cases, as early as the second or third dose.

TABLE I.

TOXIC MANIFESTATIONS FOLLOWING THE USE OF MYOCHRYSINE IN 100 CASES OF RHEUMATOID ARTHRITIS

	No. of cases
Skin (minor reaction)	19
Mucous membranes	13
Gastrointestinal	11
Joints	8
Kidney	7
Blood	4
Skin (major reaction)	4
Central nervous system	4

Skin reactions vary considerably from mild to very severe. Pruritus, mild erythemas, and more discrete maculopapular eruptions which sometimes desquamate are minor reactions which clear rapidly when treatment is discontinued. Major skin reactions were the most serious toxic manifestations encountered in our series. Four patients developed a severe, exfoliating type of dermatitis, one with marked œdema of the lower extremities. Such severe reactions gave us much concern, but in these cases dramatic quiescence of the arthritic process was usually observed.

Mucous membrane.—Small areas of ulceration may occur on the lips, buccal mucous membrane, under the tongue or under dentures. In two cases these lesions were sufficiently painful to make mastication almost impossible for a period of two weeks. The patient may complain only of a burning or sore mouth without ulceration, which is sufficient warning to discontinue the drug immediately. One of our patients developed a similar type of ulceration in the vaginal mucous membrane. If the gold is stopped when these lesions appear, they clear rapidly and often do not recur when the treatment is resumed.

Gastrointestinal symptoms occurred frequently but were not serious. Loss of appetite, nausea, vomiting and diarrhœa were all observed and some patients complained of epigastric pain.

* A report on Gold Therapy in Chronic Arthritis presented by A. A. Fletcher and J. W. Graham at the Annual Meeting of the Canadian Medical Association, Winnipeg, June, 1941, reviewed the treatment of the first 60 cases of this series.

There were no cases of jaundice but in four instances urobilin was found in the urine.

Joint reactions of pain, and sometimes swelling, occurred in eight cases with each injection of gold and lasted for twenty-four to forty-eight hours. Treatment was not discontinued.

Kidneys.—The presence of occasional traces of albumin in the urine was not considered of sufficient import to include these cases in the toxic kidney reactions cited in Table I. It would appear to be safe to continue treatment in the presence of a *trace* of albumin, but the patient should be kept under careful observation, as this finding may signal the onset of true nephritis. In seven cases, albumin, red blood cells or casts were found and treatment was discontinued. The urine cleared within a few weeks.

Blood changes in our patients were limited to a decrease in white blood cells. In four cases the treatment was discontinued when the white blood count fell to approximately 2,000. The average initial hæmoglobin content in this series was 71% and in the majority of cases the hæmoglobin rose during treatment. None of the patients developed hæmorrhagic complications. Platelet counts were not done, but other observers have reported a considerable decrease during gold therapy. It has been reported that a single dose of 10 mgm. reduced the circulating platelets 50% in two to four days. Aplastic anæmia, a reaction which has been reported by others, was not observed in our cases.

Central nervous system.—Four patients developed symptoms related to the central nervous system: one, a central scotoma with blurring of vision which cleared in three months; the other three developed loss of taste (quinine, salt and sugar) and the sense of smell was also impaired.

Although the incidence of toxic reactions is high, it must be remembered that few of these reactions are alarming. It must also be borne in mind that rheumatoid arthritis runs a tragic course and that there is justification for using treatment which is associated with some danger. However, wide general use of this drug cannot be advocated unless the physician is prepared to observe every precaution.

PRECAUTIONS

It is wise to explain to each patient that gold therapy is not infallible and that severe reactions may occur. There is no certain method of preventing toxic reactions, but their severity may be moderated by early recognition and immediate cessation of gold administration. The urine and blood must be examined frequently. In this series a urinalysis, white blood count, and sedimentation rate (Westegren) were done each week in the hospital cases. The blood examination was done every second week in ambulatory cases.

Further precautionary measures include the initial administration of small doses of the drug to detect idiosyncrasy, the use of an aqueous solution of gold salt, and questioning of the patient each week in regard to skin and other manifestations. Unless specific questions are asked, the patient, in his ignorance of possible consequences, may fail to report minor symptoms which might progress seriously with continued treatment.

There are few contraindications to the use of gold therapy, but diseases of the skin, kidney and liver disorders, and pregnancy should be mentioned.

RESULTS

This series has been classified, according to the results of treatment, in five groups (Table II). Because of toxic reactions, 5 of the 100 patients received only a few doses of gold and, therefore, are not included in the results of treatment. The majority of the remaining 95 patients received only one course of 12 injections. A few received two or three courses.

TABLE II.
RESULTS OF TREATMENT OF 95 CASES OF RHEUMATOID ARTHRITIS WITH AQUEOUS MYOCHRYSINE

Result	*Cases* *Number*	*Percentage*	
Remission (apparent inactivity of arthritis)	15	16	67%
Very much improved	49	51	
Improved	19	20	
No improvement	12	13	
Worse	0	0	

A good result appeared to be definitely related to a fall in sedimentation rate. This fall occurred in the great majority of cases in our series. The average initial sedimentation rate in the 95 cases was 66; the average rate after completion of one course of treatment was 34.

An analysis of the clinical results in relation to the sedimentation rate is shown in Table III. It will be noted that in cases showing recovery or remission of the arthritic process the high initial sedimentation rate fell to a normal level, whereas in cases showing a lesser degree of benefit the fall in sedimentation rate was less marked, and when little or no clinical improve-

TABLE III.

RELATION OF IMPROVEMENT TO FALL IN BLOOD SEDIMENTATION RATE

Result	*Sedimentation rate* *Average initial*	*Average final*
Remission	52	14
Very much improved	64	28
Improved	55	39
No improvement	76	73

ment occurred the initial sedimentation rate was not appreciably altered.

There is some evidence that advanced age diminishes the probability of improvement but this has not been shown in all reports. Snyder[8] found age no contraindication to gold therapy; in fact, his group over 40 years of age responded better than a group of younger patients. In our series best results were obtained in the younger group and in cases of short duration, but gold can be effective even late in the course of the disease (Table IV).

TABLE IV.

RELATION OF IMPROVEMENT TO AGE AND DURATION OF THE ARTHRITIS

Result of treatment	*Average age years*	*Average duration of arthritis years*
Remission	33	2
Very much improved	42	7
Improved	37	9
No improvement	49	8

Eight patients with Strümpell-Marie (ankylosing) spondylitis were given one course of treatment with no beneficial results. Here again, as an indication of failure, the sedimentation rate failed to show any significant change. The average initial sedimentation rate in these eight patients was 59, and the average final rate was 62.

MODE OF ACTION

The mechanism of gold therapy has not been adequately explained. Feldt[9] suggested an action upon the reticulo-endothelial system. By others it has been regarded as a chemotherapeutic agent. When injected into experimental animals, the salt is bacteriostatic for hæmolytic streptococci. Dawson and Hobby[10] were able to protect mice against 1,000 lethal doses. According to Hartung[11] the serum of patients under treatment retains increased bacteriostatic power for many months. More significant perhaps are the studies of Findlay, Mackenzie and MacCallum[12] and Sabin and Warren[13] on the arthritis of mice due to a pleuropneumonia-like organism. Sabin and Warren state that, with adequate dosage, gold is curative in almost 100% of animals.

In the metabolism investigations of Freyberg, Block and Buchanan,[14] the metal was demonstrated in the plasma of treated patients at levels roughly proportional to the amount given. No concentration of the salt was found in the synovial fluid, the amount being approximately the same as in the plasma, and excretion was largely by way of the kidney. Specially noteworthy was their statement that traces of gold may be detected in the urine up to thirteen months after the last injection.

DISCUSSION

In general the results of gold therapy in our cases of rheumatoid arthritis have been good, in some cases, dramatic, and we feel that a valuable addition has been made to the treatment of this disease. The incidence of toxic reactions and their occasional severe character are serious considerations, but they are scarcely comparable to the grim prognosis of polyarthritis which is taking a downward course. When arthritis conforms to the classical picture of chronic, progressive, multiple (atrophic) arthritis, in most cases gold will materially shorten the duration and moderate the severity of the active and crippling stage of the disease. In milder cases it would seem advisable to employ first all the usual measures of medical care. In any case, the drug should be regarded not as a cure, but rather as a check to the reactions that are manifest in joint disorders.

There is no justification for the use of gold in any rheumatic or joint affection other than rheumatoid arthritis. It is of no value in the treatment of the various forms of fibrositis, myositis, neuritis, rheumatic fever, gout, the so-called menopausal arthritis or osteoarthritis. Other measures, which are highly efficient, are available for the treatment of gonococcal arthritis; for this reason, in certain cases a careful differential diagnosis should be made. Cases of Strümpell-Marie spondylitis in this series did not respond favourably to gold therapy; this is consistent with the reports of other investigators.

Emphasis has been laid upon the significance of the erythrocyte sedimentation test, which appears to be the most sensitive index of progress, and should influence decision as to when treatment should be commenced or resumed. Untreated cases with a normal sedimentation rate are likely quiescent, and in those with deformity and disability the disease has probably reached an end or burnt-out stage. It would seem unwise to start gold therapy in any such case. A raised

sedimentation rate, however, is met with in many forms of arthritis and is not necessarily an indication for this method of treatment. Ellman, Lawrence and Thorold[3] pointed out that 96% of their reactions occurred in the presence of a normal sedimentation rate and they advise discontinuing gold administration when the rate reaches a normal level. We have noted this tendency to reactions when the rate is low but, on the other hand, have seen many toxic phenomena with high sedimentation levels.

The high toxicity of gold salts remains a serious obstacle to their general clinical introduction. Unconfirmed claims of low toxicity have been made for new preparations which usually prove deficient in clinical value. This has led to the suggestion that toxic reactions and anti-arthritic effects of gold are both parts of the same mechanism and are not likely to be found independently. Copeman and Tegner[15] have pointed out that, while complications are not essential to success, "in those cases in which severe toxic symptoms supervened a great improvement in the arthritis resulted subsequently". In our cases it has been especially true that those who suffered from severe dermatitis almost always underwent striking improvement in their joint lesions and felt no undue regret over this distressing experience. Frequently, however, remissions set in without any toxic complications. Every effort should be made to prevent the occurrence and gravity of reactions by careful adjustment of dosage and by prompt recognition of early symptoms.

From reports made in recent years it would appear that fatal complications are becoming much less frequent, but the possibility of their occurrence cannot be ignored entirely. Cecil and his co-workers,[5] in their series of 235 cases, had one death with ulcerative enteritis, and Dawson, Boots and Tyson,[6] in a series of 100 cases, had one fatal case of aplastic anæmia and one serious reaction with nephrosis. In the series of cases reported here no fatal reactions were encountered, but one death from nephrosis and two from aplastic anæmia have come to our notice.

Disappointment has been expressed in some quarters at the high incidence of relapse after periods of marked improvement following gold therapy.[16] Cecil[5] reported a 40% incidence of relapses in 169 patients who had previously responded to treatment by showing remission, great improvement or moderate improvement, but he stated: "relapses were definitely milder than the original attack". Hartfall[2] observed that most recurrences supervene after the initial course of injections, that they usually clear up readily after a second course and do not recur. In our series there have been comparatively few relapses. The permanence of relief apparently is dependent in part upon the amount of gold administered. It has been our impression that the incidence of relapse is further reduced by continued care of the patient; rest, controlled activity, orthopædic therapy, avoidance of extremes of temperature and the maintenance of good nutrition appear to ensure a more lasting benefit.

SUMMARY

1. Of 100 cases of rheumatoid arthritis in which treatment with gold salt was undertaken, 95 received at least 1.06 grm. Of these 95 cases, 67% underwent remission or were very much improved; another 20% showed moderate improvement.

2. Fifty-four of the 100 patients showed one or more toxic manifestations, the majority of which were mild and cleared up with temporary cessation of treatment. The most severe were four cases of skin reactions with exfoliating dermatitis.

3. Gold appears to be a valuable addition to the treatment of progressive rheumatoid arthritis. The serious dangers incident to its use have been discussed.

4. Dependence was not placed on drug therapy alone. There is evidence that general medical care and protection contribute to favourable progress and lessen likelihood of relapse.

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PSYCHOSOMATIC MEDICINE AND THE GENERAL PRACTITIONER*

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WITH increasing frequency the word "psychosomatic" appears in medical literature. It is a useful and meaningful word as applied to sick people and the practice of medicine, as it directs attention to both aspects of personality, the mental and the physical and their interrelationships. For too long the general practitioner was expected to concern himself only with the somatic aspects of health, leaving the mental features to the psychiatrist, or, more commonly, and to the detriment of the patient and the profession, to the irregular practitioners, faith healers and Christian Scientists. The old adage, "The sound mind in the sound body", implied a distinct independence of the mental and physical, the body being a receptacle or vehicle for the mind. The growing emphasis is to reword the adage, "The sound body—mind" or "The healthy personality in its mental and physical qualities".

In the past, psychiatry has usually been thought of as a narrow specialty, limited largely to mental hospital practice and the so-called insane or psychotic. The general practitioner was perhaps only too willing to turn over to the psychiatrist his psychotic patients, because of his unfamiliarity with this field and the difficulty of treating such patients in their homes or the local general hospitals, most of which unfortunately still lack a properly equipped psychiatric ward for the diagnosis and treatment of delirious and non-delirious mentally sick patients. I am using the word "delirious" as a synonym for "psychotic" or "insane", my reasons for doing so being discussed in some detail in an earlier paper.[1] The general practitioner willingly assumes responsibility for the patient whose delirium is due to pneumonia. Might he not also assume responsibility for the patient whose delirium is due to emotional stresses? The psychiatrist, having to care for delirious patients (and some non-delirious forms of mental disease) has to take cognizance of all known factors, physical and mental, inherited and environmental, which may have had some part in causing the illness. Psychiatry might therefore be looked upon as general practice in a very broad sense, and, conversely, one might say that the present-day general practitioner is or should be his own psychiatrist.

Emphasis on the psychic and somatic integration in the total personality was stressed primarily by Adolph Meyer in his teachings and research at Johns Hopkins. World War 1 brought additional point to these studies by the manifestations of physical symptom complexes the result of emotional conflicts, such as so-called "shell-shock".

Dunbar[2] in 1935 summarized all the known medical literature which appeared between 1910 and 1933 dealing with psychic and somatic relationships in disease in a comprehensive volume entitled, "Emotions and Bodily Change". Cannon[3] in very important researches, showed how distressing emotions can and do disturb physiological functioning and pointed out that many physical complaints may be caused by emotional stresses stimulating the sympathetic division. The establishment in 1939 of the *Journal of Psychosomatic Medicine* marked another milestone and provided a forum for the discussion of disease in its physical and mental relationships. The very recent publication by Weiss and English[4] of a volume entitled, "Psychosomatic Medicine" and by Levine[5] entitled, "Psychotherapy in Medical Practice" unite to bring the practical applications of these relationships closer still to the general practitioner.

An editorial[6] in the *Journal of the American Medical Association* might be quoted in part to conclude this brief summary:

> "In recent years the development of medicine has revealed increasing interest in the patient as a whole. . . . In somatic medicine the patient's stomach, liver or blood vessels are the doctor's concern; in psychiatry the patient's actions are investigated. Psychosomatic medicine attempts to bring together these two points of view. In the psychosomatic approach the investigators seek to find the relationship between what the stomach is doing and what the patient as a whole is doing. How do the patient's emotions, his effort, hopes, discouragements and anxieties influence the different parts of his body? . . . Understanding of the patient's mental condition in the past was primarily a question of intuition, usually called the art of medicine. . . . Psychosomatic research strives to transmute this art into a science, basing conclusions on well established principles affecting the relationship of emotions and bodily functions."

PSYCHIC FEATURES OF DISEASE

Special consideration of the psychic features in disease might be given in several groups:

A. *Delirious states (psychoses) due to toxæmias affecting the brain, e.g.,* septicæmias, toxic

* Revision of an address to the Toronto East Medical Association, March 5, 1943.

absorption, toxic thyroid, toxæmias of pregnancy and parturition, bromide poisoning, alcohol poisoning. In this group the delirium is the result of toxic interference with the function of the brain and the delirium persists only as long as the toxæmia is circulating through the cerebral blood vessels. It will be noted also that the toxæmia may arise within the body or be introduced into it from without. The treatment of course, depends on dealing with the underlying factor producing the toxin and its successful elimination.

A few words about individual members of this group:

1. *Puerperal deliria.* — These are of three kinds: (*a*) A general toxæmia due to a combination of physical factors, septic absorption, eclampsia, kidney damage, hæmorrhage, exhaustion, fatigue. The delirium clears up as soon as the physical factors are dealt with. (*b*) *Schizophrenic delirium.*—An acute fulminating schizophrenia, only in small part due to physical factors, the more important etiological elements being constitutional frailty, emotional immaturity, fear of responsibility, and domestic discord. This form of delirium is always ominous. (c) Occasionally *manic depressive* or *hysterical reactions,* also due largely to emotional situations but affecting the personality to a lesser extent. Often associated with physical etiology and a favourable outcome to be expected in a short time.

2. *Post-infectious deliria.*—Whereas delirium may not infrequently accompany fever, it may occur after the fever has subsided and is apt to cause great alarm and discouragement to the physician and relatives. These delayed delirium reactions practically always terminate favourably after a few days. Only symptomatic treatment and good nursing is needed at this stage, and mental hospital admission is quite unlikely to be needed.

3. *Bromide delirium.* — Fortunately, a rare condition, but nearly every mental hospital admits a few cases each year. Even these few cases could be eliminated however if all physicians knew the potential danger of causing a bromide delirium by the too generous administration of this very useful drug. Given or taken for mild sedation, the dosage may be increased in the hope of getting the desired effect. Restless confusion may develop, whereupon the dosage may be still further increased. An acute delirium may then quickly supervene, necessitating mental hospital treatment. A blood bromide estimation may indicate a toxic level (more than 150 mgm. %). Under sodium chloride and abstinence from further sedation, the delirium will clear as soon as the blood bromide is reduced to a non-toxic level.

4. *Alcoholic delirium.*—This is much too large a subject to be more than mentioned here. The commonest form of alcoholic delirium is ordinary intoxication (drunkenness). Delirium tremens and alcoholic hallucinosis are next in frequency. Alcoholic paranoia and Korsakoff's syndrome are rare. The problem of satisfactory treatment is closely related to the psychological factors of drinking to excess and the personality of the drinker. Some of these problems have been discussed in a previous paper.[7]

B. *Delirious states (psychoses) due to organic brain disease.*—In this group there is some actual destruction of brain tissue, resulting most commonly in loss of memory, disorientation, thinking difficulty and intellectual failure. The chief types of disorder are the senile and arteriosclerotic psychoses; general paresis; brain tumours and brain damage due to physical trauma might be included.

1. *General paresis* is a good example of a psychosomatic disorder which was formerly a psychiatric problem but has now moved into the general hospital and private practitioner field. The treatment of syphilis, its essential cause, is from first to last, a responsibility of the general practitioner. Fever cabinets and other thermal treatment facilities are now commonly found in general hospitals and more than 30% of fully developed paresis responds favourably to heat or tryparsamide or some combination of these.[8]

2. The largest and therefore the most important delirious group among organic brain diseases is that found in *senile* and *cerebral arteriosclerotic* subjects. In spite of sensational stories in the press and elsewhere concerning the incidence and reputed increase in mental disease it can be stated definitely that there is no actual increase in the incidence of mental disease (there is probably even a decrease), except in the old-age group.[9] The shift in the proportion of population in the various age groups reveals a definite trend to the higher age brackets. This trend is expected to continue, and, coupled with the inability or unwillingness of young people to care for their aged relatives with mental breakdown, and with the knowledge that the old-age group has by far the largest

incidence of mental disease, we see an ever-increasing problem. It is my belief that all mental illnesses are essentially preventable but this paper is not dealing particularly with preventive psychiatry (mental hygiene). Nevertheless, the failure of our arteries to serve our cerebral needs as long as life lasts puts a very important challenge before our profession, a challenge to us to acquaint the public with the rules of healthy living in both physical and mental aspects.

At the present time the mental hospitals are receiving an ever-increasing number of this group, taking a high proportion of the time of physicians and nurses which might be used to better advantage for the potentially curable patients in the younger age groups. Their increasing numbers add materially to the problem of overcrowding in mental hospitals. It is recommended that nursing homes or hospitals for elderly patients provide facilities for the care of this group as a solution to this growing problem.

C. *Delirious states (psychoses) due to constitutional predisposition, acted on adversely by environmental stresses.*—The two chief members of this group are *schizophrenia* (dementia præcox) and *manic-depressive psychosis.* So far as we know, the brains of these individuals reveal no recognizable disease nor is there any known toxin affecting the brain's physiological functioning. Schizophrenia may be said to be a reaction of a frail personality to stresses that are more than it can carry, in the same way that other frail individuals react by alcoholism, drug addiction, or suicide. Viewed in this light, the prevention of these deliria depends ultimately on being born of sound stock, a healthy developmental environment, good mental hygiene education, personal and social security, and avoidance of crushing stresses, either physical or emotional.

Treatment of these conditions depends on early recognition of symptoms of depression or hyperactivity, insecurity, change in behaviour or thinking. In early or mild cases, treatment may be undertaken at home or in the local general hospital, utilizing the services of the Department of Health's travelling mental health clinics if necessary. There should be a complete examination of all the psychosomatic factors, an investigation of the personal and environmental stresses, and an attempt to correct the physical and mental inadequacies, to improve the environmental situations which have been undermining or damaging the soundness of the personality functioning, and to deal with symptoms as they arise. Should the symptoms become more serious so that adequate treatment cannot be given at home or in the local general hospital, only then should application be made for admission of the patient to the district mental hospital.

Within recent years "shock" treatment has been used extensively for the treatment of these conditions, particularly in mental hospitals, and, of course, should only be administered by those trained in its use. Coma or convulsions are produced by insulin, metrazol or electricity and, although the rationale is not by any means understood, the results in some instances have been remarkable. Treatment is more effective in the manic-depressive group. Insulin shock is preferred for the schizophrenic reactions; metrazol or electro-shock for the manic-depressive group. Schizophrenia, being essentially a much more malignant condition, responds with only moderate success and only in early cases.

Still more recently a surgical treatment, known as prefrontal lobotomy,[10] has been used as an ameliorative treatment for long-standing mental agitations. A series of incisions is made into the brain substance in front of the optic thalamus, cutting the tracts that connect it with the prefrontal lobe. In this group of patients some who have failed to respond to more general treatment have shown a great improvement in the disappearance or reduction of their tensions and anxieties, and some have made good social recoveries.

D. *Non-delirious mental states (psychoneuroses)* constitute a very large group of psychosomatic conditions. These are closely related to the delirious conditions discussed in the immediately preceding section, having somewhat similar etiological factors. These individuals also have frail mental constitutions, but the frailty is less and the environmental stresses produce less severe mental changes. The chief members of this group are hysteria, "traumatic" neuroses, "war" neuroses, neurasthenia, anxiety states, reactive depressions, hypochondriasis and obsessive-compulsive states.

The "war" neuroses have been ably discussed by Hyland and Richardson,[11] from the standpoint of the importance of excluding the mentally frail from military service, of etiology, and of treatment. The difficulties of satisfactory

treatment, even with a full-time specially trained medical staff in a hospital serving this type of illness, may excuse the general practitioner for his failure to cure all similar civilian cases which may come to him for treatment.

It will be noted that the psychic disturbances in this large and varied group of "neurotic" patients are largely reflected in somatic symptomatology—fatigue, sleeplessness, pains, digestive disorders, physical invalidism, stuttering and other muscular difficulties. The physician should therefore not be diverted from the main task of tracing these somatic symptoms to their psychic causation, nor should he expect to cure the mental disorders if his therapeutic efforts are directed only to the somatic complaints.

That the general public have some awareness of the conversion of psychic problems into physical problems is indicated by common language expressions. The discouraged individual says he is "tired" of it all and is apt to show undue physical fatigue; we are "fed up" with certain intolerable situations and actually may have a sense of gastric fullness and loss of appetite (a gastric neurosis); great distress or hope deferred "maketh the heart sick", *i.e.*, a cardiac neurosis; an inconsiderate or unkind husband may cause his wife a "pain in the neck", or perhaps more commonly, pelvic pain.

Treatment of the psychoneurosis is essentially the seeking, finding and removing of the emotional etiological factors and distressing situations, with symptomatic treatment of physical factors which may arise and the correction of obvious and recognized somatic factors. Surgery by itself is no treatment for the removal of a psychoneurosis but may add to the invalidism and inflict further physical and psychic trauma. A few further comments on treatment will be included in the final paragraphs.

E. *Mental factors complicating or in part causing actual physical disease.*—There are several sub-groups as follows: (1) A physical disease, such as cancer, may be made symptomatically better or worse by the patient's attitude to it. If calm, confident and optimistic, his symptoms may be much less severe and he may show at least temporary improvement in his general health. Conversely, the opposite may be true. (2) A psychoneurosis may exist coincidentally with a physical disease. For example, tuberculosis may develop in a person who may have quite independently a psychoneurosis. (3) Emotional factors may predispose to or aggravate a physical disease. The relationship of unhappiness and anxiety to peptic ulcer will serve as an example. Similarly fear, rage, and anxiety may elevate blood pressure and lead to "essential" hypertension and other cardiovascular disturbances.

Bronchial asthma and other allergic phenomena are said to be related to feelings of insecurity, anxiety, hostility, and a need for being protected.

PSYCHOTHERAPY

Psychotherapy is one of the therapeutic skills used by all physicians in conjunction with other methods of treatment. It is the attempt to use in one way or another the mental forces of the physician to deal with the mental factors in disease. In its most frequent and direct form simple suggestion is used. The fears and worries of the patient, the unhealthy suggestions he gives himself or receives from patent medicine advertisements, may be largely counteracted by the reassuring, positive, healthful suggestions of the physician who remembers he is treating not a disease, not an organ, but a sick person. It should also be remembered that medicinal therapy or physical therapy, when used for specific purposes do not decrease but rather augment the value of psychotherapy.

Suggestion by itself is frequently not powerful enough to produce a therapeutic effect and it is nearly always desirable to make a careful analysis of the emotional factors in the case. With all deference to the psychoanalysts any physician who has the patience and the interest to make a thorough inquiry into the personal factors will discover enough material to enable him to be of real value to the better understanding of the patient himself, of the emotional factors which have in whole or in part caused his symptoms.

It should be kept in mind also that there are patients who literally "enjoy poor health". Without the will to be well psychotherapeutic efforts will be largely wasted. As a necessary prerequisite to successful therapy therefore we must be sure that the patient really wants help and will co-operate with it. If this will to be well is not present we will need to try to arouse it by tactful but definite persuasion, example and encouragement.

A good "rapport" is also essential as mutual confidence between physician and patient provides the medium for the exchange of mental

influences and makes the patient receptive and responsive to our efforts for him.

The patient brings himself to the physician for treatment because of impaired health. Psychic etiological factors may be important and should be sought for and removed if possible along with the physical factors. Health implies not only healthy organs but a healthy organism, adjusting comfortably and working efficiently in relationship to its total environment. The safeguarding and preservation of psychosomatic health is the responsibility of the medical profession and particularly of the general practitioner, who, for the majority of psychic disturbances, should be his own psychiatrist.

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ACUTE (FEBRILE) POLYARTHRITIS IN THE ARMY

By Major G. C. Ferguson, R.C.A.M.C.

DURING the months of February, March, April, and May, 1942, clinicians in all the military hospitals in Canada noticed a sudden increase in the number of cases of acute arthritis being admitted to hospital. During the year ending July 31, 1942, there were 534 cases of various types of acute arthritis admitted to all Canadian hospitals, and of these, 331, or 62%, were admitted during the four months mentioned above.

This increase in the admission rate of acute arthritis coincided with the appearance of large numbers of cases of upper respiratory infections, in particular, scarlet fever and acute streptococcal (hæmolyticus) tonsillitis and pharyngitis. It was noted that a large number of these cases ran a course similar to acute rheumatic fever, but it was the impression of observers that an unusually high percentage of them did not develop the cardiac complications which most authorities include as an integral part of their definition of acute rheumatic fever. In the Army when a definite diagnosis of rheumatic fever was made, most medical officers immediately classified that individual as one having a progressive disease and as a result, boarded him out as medically unfit. It was felt that these cases needed to be reviewed, partly because of this wastage of trained army personnel, and also to see if they did have to be considered under acute rheumatic fever, or if it would be better to reclassify them, as others have, as toxic or infective arthritis.

The following criteria were laid down for the diagnosis of acute polyarthritis in order to eliminate a large group of specific arthritides and many that were classified as being rheumatic fever but have never shown any clinical evidence of arthritis. (1) The case must have clinically swollen joints. (2) There must be multiple joints involved. (3) The cases must be febrile. (4) The case must be non-specific in etiology (*i.e.*, not tuberculous or gonorrhœal) and not chronic rheumatoid, or osteoarthritis with an acute relapse.

In all, 243 cases were found to fall into this group. An analysis of them was made under the usual headings of history, examination, clinical and laboratory, type of therapy and the disposal of the case. As the majority of those discharged as physically unfit for further service passed through the hands of the Department of Pensions and National Health physicians one was able to assess the residual symptoms and physical findings from their records and, from this, determine whether the case would have been discharged from the Service under the present method of handling this group. The title of this paper was deliberately chosen as Acute (Febrile) Polyarthritis rather than Rheumatic Fever because these cases do not conform to all the usual criteria of the diagnosis of the latter. Another reason was to be able to compare results with the next group and to pick out those retained in service and study them again at a later date.

CLINICAL DESCRIPTION

1. *Predisposing factors.*—(*a*) Age: Of the cases studied, the ages varied from 16 to 44. The greatest number, 78%, were between 18 and

25 years of age. Only 9% fell into the 26 to 30 division and approximately 4% in each five-year group up to 45 years of age. This age-incidence is younger than the average age of soldiers, which runs: 58%, 18 to 29 years; 25%, 30 to 39 years; and 18%, 40 to 50 years. (*b*) Season: 65% of the cases were admitted to the hospital during the four months between February and May inclusive. (*c*) Relation to other infections: Many of the histories make no mention of a preceding infection. Of the total number 58% developed their arthritis within twelve weeks of an acute infection. Of this group arthritis began within one week of their primary infection in 47% and within two weeks in 71%. The remainder followed their primary infection in progressively declining percentages, 95% developing within four weeks.

In 87% of those with a primary illness this was a *streptococcus hæmolyticus* throat infection, with or without a rash. I feel that this is a better way to express this figure than subdividing it into tonsillitis, scarlet fever, etc. Pneumonia, bronchitis, measles, otitis media, mumps and tooth-extraction preceded the others. (*d*) Relation to previous attacks: Of the 243 cases 50, or 20% of those reviewed, gave a definite history of one or more previous attacks of polyarthritis. The majority of these were in childhood and early adolescence.

2. *Bacteriology.*—Very few of these cases were intensively investigated on this point during the year dealt with. The vast majority of the primary illnesses where a bacteriological study was made, showed a *S. hæmolyticus* infection. Those in whom blood or joint cultures were done gave negative growths.

3. *Symptoms and signs.*—The majority of the cases showed a very acute onset with the primary complaint being pain in one or several joints. This was accompanied by some degree of generalized malaise, anorexia and fever which varied with the acuteness of the case. Temperatures on admission ran between 99.4 and 105°, the average being 101.4°

A small percentage of cases complained of flitting aches and pains in their joints for a week or more before they became acutely ill. The majority had a sudden onset of pain in one or more joints coincident with the beginning of fever and malaise. In point of fact, 56% of cases were admitted to hospital within three days of the first complaint of pain, and 86% within seven days. The commonest joints involved were the knee, in 80%, and the ankle, 54%, then, in order of frequency, wrist, shoulder, tarsal joints, elbows, metacarpo-phalangeal and interphalangeal joints of the fingers, metatarso-phalangeal and interphalangeal joints of the feet; only 6% had the hip involved. The typical joint was swollen, both with synovial effusion and periarticular swelling. It was red, hot, tender and very painful on movement. These signs developed in the following order, pain on passive movement, local heat, periarticular swelling followed by local redness of the skin, and finally effusion. There were joints in several stages presenting at the same time. More than half the cases showed the typical flitting as commonly described in acute rheumatic fever. This manifested itself particularly in those cases which were given insufficient or no salicylates, as the majority were admitted to hospital early in the course of their disease.

The joints subsided completely with no residual findings except in a few cases. These, the minority, complained of pain and stiffness on moving the joint. Sixteen cases finally ended as progressive rheumatoid arthritis with permanent periarticular swelling. A few cases showed the polycyclic and continuous type of disease seen in rheumatic fever in children, but the vast majority were monocyclic. The joints usually resolved within a week of admission to hospital.

Heart murmurs developed in 116 cases (48%) during the course of their illness; 110 of these were apical systolic murmurs, and 52 of them were soft and transient and had disappeared by the time the case was convalescent, usually within ten to fourteen days. The 64 remaining cases were considered to have a persisting endocarditis and of these all but six were diagnosed as mitral insufficiency. One had a mitral stenosis and the other five had aortic insufficiency. Two cases included in the mitral insufficiency group had no murmur during their original attack but developed signs of endocarditis during a recurrence. Four cases developed a pericarditis with effusion and two cases had an extension to a pleural cavity with an effusion.

The pulse followed the curve of the temperature except in those cases with cardiac involvement, in which it usually persisted at a higher rate. It noticeably climbed when the patient was allowed activity too early in his con-

valescence. It is an excellent guide as to the amount of activity this type may have and a persistent high pulse rate indicates the need of further rest. The respiratory rate followed the fever except in those cases complicated by a serious cardiac condition, pleurisy or pneumonia.

None of this group showed any of the subcutaneous nodules seen in childhood rheumatic fever. One case had an erythema nodosum. Two cases had a diffuse rash labelled erythema marginatum and one erythema multiforme.

Neurological involvement was limited to one case that developed chorea at the same time as the arthritis.

4. *Laboratory findings.*—(*a*) The white blood count was elevated and in this group averaged 15,800 per c.mm. There was also an elevation of the blood-sedimentation rate, the average being 60 mm. per hour by the Westergren method. Many of the more acute cases ran a sedimentation rate up to 110 and 120 mm. per hour. (*b*) Electrocardiographic investigation: 34 cases had electrocardiograms done and of these ten showed changes from the normal. Five had an auriculo-ventricular block of some degree which was usually transient. Four showed a change in the ST takeoff and the T-wave in one or more leads and one case had a right ventricular preponderance. The small number of cases that had electrocardiograms done merely points out the importance of this method of investigation and because the findings are frequently transient, serial tracings should be made. It is interesting to note that of the ten cases showing abnormal tracings two had no other evidence of cardiac involvement. In childhood rheumatic fever some authorities have demonstrated as high as 95% of their cases showing electrocardiographic changes during the course of their illness.

5. *Therapy.*—The commonest therapeutic agent used was sodium salicylate or aspirin. Of the 243 cases 212, or 87%, received salicylates and 71% of them had a prompt and excellent response, with a fall in temperature and pulse, usually within three days, and a complete resolution of the joint findings within a week. Eleven per cent gave a fairly good response, but continued to complain of some pain and stiffness in one or more joints, despite the resolution of the acute signs and symptoms. Of the remaining 18%, whom I considered as showing a poor response to the drug, about half were given less than a minimal dose of 100 grains per day. Several of these responded promptly to an increased dosage. Some of the others were complicated by pneumonia, etc., others were finally diagnosed as progressive rheumatoid arthritis. A small group, adequately treated, some 11 cases, showed a poor response without any discernible reason.

Some 9% of the series were treated with one of the sulpha group of drugs, sulfanilamide, sulfapyridine, sulfathiazole or sulfadiazine. These cases all had a poor response in the influence on their general or local joint signs and symptoms. Two or three showed an improvement in the local condition of the tonsillitis they were suffering from at the same time.

Other usual therapeutic measures were carried out. Bed rest, methyl salicylate to the inflamed joints, temporary splinting of the involved joints by splints or bandaging. Codeine and nembutal were used as sedatives in the acute cases needing it and morphine very rarely.

The greatest variation in treatment was seen in the length of bed rest and ambulatory convalescence. This, of course, varied with the type of case. Those with cardiac complications were kept in bed much longer than those without. There was no standardization of the amount needed but before any activity was attempted temperature, pulse, joints, white blood count and blood sedimentation rate had returned to normal. The blood sedimentation rate would appear to be the most valuable test we have with which to judge when the disease is quiescent. Where there is a cardiac lesion the pulse rate is also a sensitive indicator.

Of the 101 cases returned to duty after an attack of acute polyarthritis 29 developed a recurrence of the disease. The most noticeable difference between those remaining on duty and those suffering recurrences was an average increase in hospitalization of 35%. In addition to strict rest and supervision of the early ambulatory convalescence these people need a period of gradual reconditioning before they are fitted to return to full duty which, in the Army, means the equivalent of hard physical labour.

The importance of persistence of low-grade focal infection was seen in a few cases and defocalization was done, principally tonsillectomies and dental attention. My feeling on this question is that routine tonsillectomy is not necessary or advisable, but only cases which

have a proved chronic or recurrent local infection should have surgical interference.

6. *Prognosis.* — The mortality rate in this group is nil. One case died by misadventure after being returned to duty with no evidence of residual joint or cardiac disease.

Of this group of cases, 81 cases, or 33%, are still in service from one to two years following their arthritis. Of these three have been boarded out of the Army for other reasons, and one has died. The other 67% were boarded out of the Army as physically unfit following their original or subsequent attacks. Eighteen per cent of the group when returned to civilian life had no evidence of joint or cardiac involvement. It is probable therefore that our group of those still on duty in the service could have been increased to about 50%. That is, 50% would probably have been on full duty 1 to 2 years after an attack of acute polyarthritis. As mentioned before, 20% of the cases had a history of a previous attack of polyarthritis, and 86% of these were included in the group boarded from service during the course of their attack, and the majority with cardiac lesion. The majority of these previous attacks were in childhood or early adolescence and this may bear out the finding that the young age-group develops a high percentage of cardiac complications.

COMMENT

As mentioned before, one of the reasons this survey was undertaken was the fact that the percentage of cases in this series developing cardiac disease was at such variance with the figures quoted by the authorities in childhood rheumatic fever namely, 80 to 95%. In fact, the usual definition of rheumatic fever given in the texts includes as a matter of course involvement of the heart. I think that it would be wise to limit the diagnosis of acute rheumatic fever to those cases which show evidence of invasion of systems other than the joints. The term acute (febrile) polyarthritis should be used in referring to those who have only joint involvement. This will be a great help in following up and analyzing these cases in the future.

When we consider that 33% of the group studied are still in service, and that this figure should have been 50%, I feel that we should not adopt the ruling used by the United States Army in discharging after an attack of acute arthritis. Of the 50% who were unable to be retained, 35% developed a heart lesion, 7% a progressive arthritis, and 8% had no demonstrable lesion but had chronic pain in their joints. The importance of a previous attack is seen in that 86% of those that gave a history of previous attacks, mainly in childhood and early adolescence, were in this group who were boarded out of the service.

Twenty per cent of the cases returned to duty developed a recurrence of the disease and were subsequently boarded out, leaving 80% still on duty for one to two years. It is felt that this percentage of subsequent relapses could be lowered if a more careful convalescence was carried out and more definite standards of disposal laid down. The following routine is therefore suggested for the handling of these cases. (1) Adequate doses of salicylates, 120 grains per day, at least, for the average adult. (2) Bed-rest until all evidence of activity has disappeared. This should include temperature, joints, pulse, white blood count and blood sedimentation rate being normal. (3) At least one month of graduated activity under close supervision to reach the place where the individual may be employed in light duties of a sedentary nature. (4) A further three months of supervised, increasing activity before the case is considered ready for unlimited physical activity. (5) Only necessary defocalisation be undertaken and that, a month after all signs of activity have disappeared.

Any case in the Army with signs of activity persisting in any system for two months be considered unfit for further service, as will those who have endocardial, myocardial, pericardial or neurological involvement. One should again mention that transient soft murmurs are not included in the criteria for a diagnosis of endocarditis. One might emphasize that the sulpha group of drugs have no appreciable effect on the acute polyarthritic.

CONCLUSIONS

1. Polyarthritis occurs in Army as well as civilian practice. The usual clinical picture is a sudden onset of acutely painful swollen joints with fever and malaise. Several joints may be involved and the involvement is migratory and resolves leaving no residual findings as a rule. The disease responds to the administration of salicylates.

2. Fifty per cent of the cases reviewed were boarded out of the Army for the following reasons: 35% for cardiac disease, 7% for rheumatoid arthritis, and 8% for joint pain with no clinical findings. The principal common factor in this group was a history of previous attacks in childhood or early adolescence.

3. Of those returned to duty, 20% were subsequently boarded out, and 80% were still on duty from one to two years after the acute attack. This percentage justified continuing the policy of retaining these cases in the Army rather than returning them to civilian life.

4. After personally seeing many of these cases and reviewing the histories of others, one finds difficulty in fitting them into the usual textbook description of acute rheumatic fever. It appears therefore, that for Army purposes at least, they should be classified as acute polyarthritis until further knowledge of this disease is obtained.

RÉSUMÉ

La polyarthrite est d'occurrence fréquente dans l'armée. Cliniquement, il s'agit d'un état débutant subitement et se manifestant par le gonflement douloureux et fébrile des articulations. L'arthropathie est multiple et migratrice; elle se termine le plus souvent sans séquelles. Les salicylates sont le médicament de choix. Cinquante pour cent des malades étudiés ont été réformés; 35% pour cardiopathie; 7% pour arthrite rhumatoide et 8% pour simples douleurs articulaires. Ces malades avaient presque tous une histoire d'accès antérieur. Chez ceux qui retournèrent à l'armée, 20% furent ultérieurement réformée, et 80% sont encore actifs après plusieurs mois. Ce pourcentage justifie les mesures prises. Cette étude doit nous inciter à réviser nos manuels car cette maladie ne se comporte pas comme la classique fièvre rhumatismale. Une bonne étiquette d'attente serait: polyarthrite aigue.

JEAN SAUCIER

Victory for the allies in North Africa has enabled the Ministry of Food to purchase between 40 and 50 million tins of sardines for consumption in this country, and every effort is being made to hasten their shipment here. Sardines should prove a welcome addition to our food supplies, as they are of high nutritive value which is enhanced by the oil in which they are canned. Analyses made by Drs. R. A. McCance and E. M. Widdowson for the Medical Research Council show that tinned sardines are 100% edible and that after draining off the oil they contain: water, 50.7%; protein, 20.4%; fat, 22.6%; carbohydrate, nil; and the following amounts of various mineral salts expressed as milligrams per 100 grams: sodium, 785; potassium, 433; calcium, 409; magnesium, 41.3; iron, 4.0; copper, 0.04; phosphorus, 683; sulphur, 283; and chlorine, 1,200. Their calorie value is 294 per 100 grams.—*J. Roy Inst. of Public Health & Hygiene*, 1943, **6**: 249.

THE CONSERVATIVE TREATMENT OF SINUSITIS IN CHILDREN*

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DURING the past few years there has been a greater interest in this subject, judging from the increasing number of articles in the current literature. By sinusitis we mean an inflammation or infection of one or more of the accessory sinuses of the nose.

The term sinusitis as used by the laity is not perhaps correct, as it suggests inflammation with redness, swelling and pain as the cardinal symptoms. This, in itself, is a very rare occurrence, particularly in children. When this condition was first described over twenty-five years ago, many rhinologists were skeptical as to its existence. However, with greater experience and improved diagnostic methods, sinus involvement in children has become recognized as a definite entity. Our knowledge of the development of the sinuses in infants and in young children has also increased in recent years. Dean, in his original and instructive paper, stated that inflammation of the sinuses in children two years of age and over is common. Coakley mentioned in 1914 that when a chronic nasal discharge exists in a young child in whom the adenoid has been removed, the presence of sinus disease is fairly positive. He also believed that the majority of cases of sinusitis in children under four years of age was due to involvement of the ethmoid, while Skillern[1] thought this to be true in children under five years of age. Roentgenograms sometimes show a surprising development of the other sinuses as well in children after the third year and this fact is borne out by Mosher's[2] investigations. He thought the maxillary antrum, for example, to be large enough for surgical intervention in some cases after the third year.

When one considers the sinuses as evaginations from the nose and lined with the same continuous mucous membrane, it is logical that an acute coryza should spread over the whole surface and affect the sinuses in a certain proportion of cases. It seems to be an established fact that all acute colds that do not clear up within a few days involve the sinuses as well.

* Presented before the McGill Reporting Society, November 1, 1943.

In view of this every head cold should be regarded as potentially an acute sinusitis and treated as such. These early cases, as a rule, respond readily to conservative treatment as soon as ventilation and drainage are established. This is best accomplished in young children by the use of mildly astringent drops.

Unfortunately, too many cases are not recognized early and they pass into the subacute or chronic stage before seeking advice. There are a number of reasons for this delay. Sinusitis in children is usually insidious in its onset; (1) direct inspection of the affected structures is impossible; (2) the symptoms produced can easily be explained in other ways; (3) there is no marked disability of any special function, and (4) it rarely leads to any serious or dangerous complications. However, the prognosis of chronic sinusitis in children is better than in adults, provided proper treatment is carried out.

It should always be suspected in cases of persistent or recurring colds with nasal obstruction. Although the common cold and influenza are the chief etiological factors, sinusitis sometimes follows the acute infectious fevers such as whooping-cough, diphtheria, measles and scarlet fever.

On questioning the parents, the three symptoms most frequently described are (1) nasal obstruction; (2) cough, and (3) repeated colds. These symptoms are very similar to those caused by enlarged or infected tonsils and adenoids and often these are removed without relieving the condition.

On clinical examination the most frequently observed sign is mucopus in the anterior portion of the nose, either in the middle meatus or on the floor. Pus in this area generally comes from the anterior group of sinuses as they seem to be more commonly involved. The anterior ethmoid cells and the antrum are the usual source, no doubt due to their early development.

It is well to remember that the ethmoid cells are present at birth and have by then already attained a considerable size. They vary in number from three large cells to about fifteen smaller ones which reach their full development at puberty. The maxillary sinus is also relatively large at birth and is slit-like in shape. The frontal sinus is not present at birth and does not begin to invade the frontal bone until the end of the second year. This sinus is still absent or rudimentary in most children up to eight or ten years of age.

On examining the pharynx and nasopharynx post-nasal discharge or frank pus is often seen. This is usually found on routine examination, as children do not complain of this symptom to any extent. The nasopharynx of a child seems less irritable than that of any adult, so that a child tends to swallow or cough up discharge with very little effort. An adult complains of post-nasal discharge, and finds it a very distressing symptom. In early childhood this probably comes from the posterior ethmoid cells as the sphenoid sinus has not yet been developed. At about the end of the third year the sphenoid bone is invaded and becomes hollowed out, forming a sinus which at puberty reaches its full development. At this age the cavity is about 20 mm. high and 12 mm. deep.

With these facts in mind, any child under six years of age with a persistent purulent nasal discharge is likely suffering from an infection of the ethmoid cells or the antrum. If the discharge is unilateral the presence of a foreign body or nasal diphtheria also has to be considered.

Although sinusitis is most frequently due to an infection many cases have an allergic basis. According to Oppegaard,[3] in his experience 30% of patients with chronic nasal complaints have nasal allergy while Hansel[4] reports as high as 44% in similar cases in routine nose and throat practice. In such circumstances "nasal allergy is not a local disease, to be treated by local measures only".[5]

The symptoms are usually quite characteristic, although they vary in different children. Nasal obstruction, intermittent discharge, sneezing, itchiness, loss of smell and cough are the chief complaints. Sneezing is usually associated with a thin, watery, alkaline discharge which is very irritating, often causing an excoriation around both nostrils. When a secondary infection takes place the secretion tends to become thicker and often muco-purulent. In an allergic child the nasal mucous membrane is usually pale, greyish, œdematous and water-logged in appearance. Polypi are sometimes present in children over twelve years of age, but often disappear when the allergic factor is controlled. Nasal smears properly stained and examined under an oil immersion lens show a predominance of eosinophils. In the presence of an associated infection neutrophils dominate the picture to the exclusion of eosinophils.

The treatment of nasal allergy is prophylactic after skin tests have been completed and suitable measures carried out.

In contrast the nasal mucosa in sinusitis shows some degree of inflammation and engorgement. This is usually more marked over the middle turbinate, as the sinuses open in this area. The air spaces are narrowed by the swollen, red mucous membrane so that aeration and drainage are hindered. It is important to keep this in mind because as mentioned previously the ethmoid cells and the maxillary antrum are the only sinuses present up to the age of six years. The anterior ethmoid cells and antrum drain into the groove below the middle turbinate and the posterior ethmoid cells in the groove above the middle turbinate. Therefore the middle turbinate is a valuable guide, as any inflammation or swelling in this region reacts on the turbinate itself and interferes with drainage.

In the clinical examination, a boggy, inflamed middle turbinate alone suggests sinusitis, even in the absence of free pus. If pus is present careful shrinkage of the middle meatus may promote drainage and make the diagnosis certain. The appearance of the pharynx is also very important. In the presence of a persistent post-nasal discharge instead of the normal smooth, glistening, pink mucous membrane there is a red, granular thickening of the lymphoid tissue. This inflamed pebbled appearance may cover the whole of the pharynx or be limited to one or both of the lateral bands behind the posterior pillars. When one lateral band is inflamed or streaked with glairy mucus or mucopus this is fairly definite evidence of a sinusitis on the same side. This is especially true if the adenoid has been removed. Accompanying these symptoms the posterior cervical glands are usually enlarged or at least palpable. Also due to swallowing the discharge there is often a lack of appetite with an associated loss of weight.

Unfortunately, transillumination in children is not as helpful as in adults. Due to the extreme thinness of the bones the light appears to shine through too clearly without enough contrast even in the presence of a marked antral infection. On the other hand most x-ray men feel that roentgenograms in children give as much information as in adults. Although this appears true in well developed sinusitis in early infections the x-ray results are often disappointing. Less penetration is necessary in these cases to show up the soft tissues instead of the bony walls.

In the light of recent knowledge concerning nasal physiology a few points should be mentioned. The respiratory mucous membrane of the nasal cavity and the sinuses consists of ciliated, columnar epithelium. This epithelial layer rests on a basement membrane supported by a network of loose, fibro-elastic connective tissue, the tunica propria, which holds the mucous membrane to the perichondrium and periosteum.

Numerous mucous glands open on to the surface and supply the secretion which keeps the mucous membrane moist. This thin layer of mucus is kept moving in the direction of the nasopharynx by the motion of the cilia. The action of the cilia is whip-like and appears under the microscope like waves similar to those seen in a field of grain when wind passes over it. Besides ciliary action the mucus film is kept in motion by traction, by the force of gravity and by the act of swallowing. As the secretion flows away it is being constantly replaced from the mucous and serous glands of the mucous membrane. This layer of mucus which moves in a steady flow is inhibitory to bacterial growth and carries organisms and foreign matter such as dust particles to the nasopharynx where it is swallowed or expectorated. Moving at the rate of 0.5 cm. per minute it traverses the distance from the anterior end of the middle turbinate to the opening of the Eustachian tube in from 4 to 10 minutes. This mucus film drains diagonally downward and backward and moves more rapidly as it reaches the meatuses.

Recently a great deal of investigation has been carried out on the chemical properties of nasal secretions. Of these one of the most important seems to be the pH, or hydrogen-ion concentration. The pH scale is a means of expressing hydrogen-ion value and this lies between 0 and 14. The neutral point of the range is 7—the pH of pure water. Values below 7 indicate an increased hydrogen-ion concentration or a definitely acid reaction, while values above 7 show an alkaline reaction. The pH value in normal persons is not constant but varies during the day and night. It fluctuates between 5.5 and 6.5, which is slightly on the acid side. During rest and sleep the nasal secretion tends to become acid, which offers a clue as to treatment in acute infections. It

has also been shown that during an acute coryza, an acute sinusitis, or in the presence of an attack of allergic rhinitis the pH value of the nasal secretions is alkaline.

In view of these newer findings it seems necessary to alter our point of view regarding nasal medication. Instead of nasal antiseptics alone it appears more logical to combine mild solutions which are inhibitory to bacteria with those that promote or at least do not retard ciliary activity. Two other important factors are the pH value of drops or sprays and their action on the mucous membrane of the nose. In other words, medication which impairs ciliary action is harmful, as well as drugs which are strongly alkaline or strongly acid. For example, certain sodium salts of the sulfonamide group are highly alkaline, having a pH from 10 to 11. On the other hand epinephrine and its derivatives are highly acid with a pH range of 2.3 to 3.7. These extremes are both irritating and destructive to the cilia and the nasal mucous membrane if used for any appreciable length of time.

Sodium sulfathiazole in from 5 to 30% solution with a pH of approximately 10 exerts an early and destructive effect on the nasal mucous membrane of rabbits.[6] Besides these drugs, silver salt preparations have been used by the profession and patients themselves for a great many years. Almost without exception they have a high pH value which is very irritating to the membrane of the nose. Even in 10% solutions there is an interference with the normal flow of mucus, although the cilia themselves do not appear to be impaired. This is thought to be due to the clumping effect of the precipitated silver protein which interferes with ciliary movement. An ideal silver preparation as well as a vaso-constrictor to be used in acute rhinitis and sinusitis should lower the high alkaline pH to between 5.5 and 6.5. It should also restore and maintain normal ciliary activity and not injure the underlying mucosa.

Menthol, eucalyptol and camphor in liquid paraffin have been prescribed for years with the mistaken idea that they clear the head. Even solutions as weak as 1% produce a swelling of the mucous membrane which reduces the volume of air through the nose to about one-half.[7] Although there is a sensation of increased patency this is not actually the case. Moreover, it has been shown that menthol, eucalyptol and camphor in 5% oily solutions sprayed into the nose daily for a period of nine months have a definitely destructive action on the nasal mucous membrane.[8]

Liquid paraffin as a base for nasal medication does not actually reach the cilia but remains on the surface of the layer of mucus.[9] Although it does not cause any chemical harm it should be avoided in acute infections where the cilia are still active. Mineral oil does not mix with mucus but lies as a heavy blanket on the mucous membrane and by its weight alone interferes with ciliary movement. The danger of pneumonia in young children following the instillation of oily drops into the nose seems relatively slight compared with the amount of liquid paraffin used.

Keeping these facts in mind, it is apparent that local treatment which does not interfere with the normal physiology of the nose is to be preferred to medication which has solely a bacteriological effect. In view of this the trend in recent years has been toward conservative treatment rather than surgical measures. Summarizing the important properties of nasal drops; they should be mildly antiseptic and have a vasoconstrictor action which does not embarrass ciliary activity; the pH of these solutions should approximate that of the mucous membrane and be isotonic as well as harmless to the nasal mucosa, and, finally, they should not produce any systemic or toxic effects.

Before the introduction of the sulfonamide compounds there was no medication which inhibited the growth of organisms in the nose. Of this group sulfathiazole is by far the most effective against the streptococcus, pneumococcus, and the staphylococcus, the usual organisms found in sinusitis. It is only slightly soluble and is absorbed slowly into the blood stream, so that after instilling sulfathiazole into the nose it tends to remain and continues to act on any organisms present. A number of reports have stressed the caustic action of sodium sulfathiazole on the mucous membrane of the nose. For instance, a 5% solution of sodium sulfathiazole instilled into the nostrils of rabbits caused thickening of the nasal mucosa in two days. The cilia became indistinct, and the columnar and basal cells showed vacuolation. Destruction progressed over ten days, and after ten days of rest there was practically no recovery.

It should be mentioned that the 5% solution used had a pH value of approximately 10. This high degree of alkalinity alone is presumably responsible for the rapid and devastating destruction of the mucosa.[10] A similar caustic action has been reported in human subjects by Fletcher.[11] However, in contrast, finely powdered sulfathiazole crystals in suspension have a pH of 6 which is within the normal range of the nasal pH. On instilling a 10% isotonic suspension of sulfathiazole into the nose there is no stinging or irritation and clinically no damage to the cilia or mucous membrane. The nasal vasoconstrictors which are commonly in use have pH values which vary from 2.3 (acid) to 9.5 (alkaline). Of these ephedrine hydrochloride 1% in physiological saline has a pH of 5.9 which is practically the same as 10% sulfathiazole. Ephedrine sulphate in normal sodium chloride solutions up to 3% does not interfere with ciliary activity.[12] On the other hand, it might be mentioned that a 1:1,000 solution of epinephrine immediately stops ciliary movement and it cannot be revived. Within the past year and a half Proetz[13] has recommended 2- and 4-amino-heptane sulphate as vasoconstrictors which it is claimed do not possess the occasional slight toxic effects of ephedrine. Whether or not these newer drugs replace ephedrine remains to be seen.

Besides the above combination it seems logical to add an agent which has some proteolytic power in order to break up pus and allow a more intimate action of the drug.

For years urea has been recognized as being mildly bactericidal "and in strong solutions has a peculiar property of being able to 'dissolve' proteins and protein substances".[14] Its specific effects seem to be: (1) elimination of odour; (2) proteolysis of necrotic tissue; and (3) stimulation of granulation and epithelialization.[15]

Closely allied to urea but much stronger in its action, is allantoin, which is excreted by maggots. During the last war it was noted that wounds infected with maggots healed better and faster than wounds that were maggot-free. This was due in great measure to the allantoin present. Allantoin appears to act in three ways, (1) it has a digestive-like action on pus or necrotic tissue; (2) where healing is slow it stimulates cell proliferation and tends to produce a healthy pink granulating tissue; and (3) it has a synergistic action with sulfa drugs. In its presence bacteria which have become sulfa-fast are resensitized to the action of the sulfonamides. And, finally, the tendency of sulfa drugs to retard healing when used over a long period of time is also overcome by allantoin. The drug is tasteless and odourless and does not stain the tissues or clothing. It is non-irritating, but rather has a somewhat soothing effect. It is not very soluble in water. However, the best results are obtained when it is in solution, 0.5% showing marked activity. This equals a 5% solution of urea. Clinically, it tends to break up pus allowing it to drain away more freely.

From our present knowledge it seems rational in acute rhinitis, sinusitis, and in severe cases of allergic rhinitis to use a nasal medication which lowers the alkaline pH found in these conditions to a normal, slightly acid level between 5.5 and 6.5.

The above combination of sulfathiazole 10%, ephedrine sulphate 1%, allantoin 0.5% in an isotonic suspension having a pH of 5.8 appears to be theoretically sound.* Drugs which are highly alkaline, such as sodium sulfathiazole solutions, are to be avoided as well as highly acid ones, as for example epinephrine. The above suspension is compatible with ciliary action, has a pH within normal limits, is almost tasteless, and does not irritate or cause damage to the nasal mucosa.

In conclusion, it is safe to say that over half the cases of sinusitis in children under twelve years of age clear up under postural treatment with nasal medication. Over 25% of cases respond to a combination of nose drops with irrigation of the antrum. In only about one-sixth of the cases is antrotomy required and this should not be performed until the more conservative methods have been given a fair trial.

The above suspension is equally applicable in the treatment of acute rhinitis and sinusitis in adults and in children.

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A PRELIMINARY STUDY OF THE INCIDENCE OF THE INTESTINAL PROTOZOA IN THE CANADIAN ARMED FORCES*

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A SURVEY of 500 unselected admissions to the Military Hospital (Department of Pensions and National Health) located at Ste. Anne de Bellevue, Que., during the period from April 26, 1943, to June 7, 1943, showed that 236 (47.2%) of these cases had some form of protozoal cyst. These men, as indicated by their rank and number, were in some branch of the Canadian forces, Navy, Army or Air Force, and as such might be taken as a representative cross-section of the armed forces in this part of Canada. The following table shows the incidence of the various types:

Protozoa	*Number of cases*
Endolimax nana	107
Entamœba coli	46
Endolimax nana and *Entamœba coli*	33
Giardia lamblia	31
Entamœba histolytica	5
Endolimax nana, Entamœba coli and *Iodamœba butschlii*	4
Endolimax nana and *Iodamœba butschlii*	3
Endolimax nana and *Giardia lamblia*	2
Entamœba coli and *Iodamœba butschlii*	1
Iodamœba butschlii	2
Entamœba coli and *Giardia lamblia*	2
	236

* From the Institute of Parasitology, McGill University, Macdonald College, Que., with financial assistance from the National Research Council of Canada.

A single specimen of stool was examined, using the zinc sulphate centrifugal flotation method of Faust *et al*,[1] the most efficient single method yet devised for the recovery of protozoal cysts. This method has been found to yield between 75 and 80% of the total positive diagnoses obtained by using a combination of three techniques, direct fæcal smear, direct hæmatoxylin-stained fæcal smear and centrifugal flotation technique. A corrected figure, then, would raise the number of positive findings considerably above 50%.

The method we used is as follows. Fæcal samples were collected in half-pint ice-cream containers which are water tight and proved to be very satisfactory for this purpose. A fæcal suspension is prepared by adding lukewarm tap water to the specimen of stool, mixing by means of a glass stirring rod and shaking the closed container vigorously. The suspension thus obtained is strained through a single layer of wet cheesecloth into a Wassermann tube, the amount needed being dependent on the proportion of fæcal material used and the consistency of the fæces. Water is added to the top of the test tube and the preparation centrifugalized in an International clinical centrifuge. The time allowed for each centrifugation is one minute at top speed. The supernatant fluid is poured off, leaving the sediment which should fill the cavity of the Wassermann tube if the consistency of the preparation is right. Water is again added and the sediment broken up by means of a wooden applicator, and the preparation recentrifugalized. This procedure of washing is repeated until the supernatant fluid becomes clear. It usually takes three or four centrifugations.

The last supernatant fluid is poured off and about two c.c. of 33% zinc sulphate solution of specific gravity 1.180 are added. The packed fæcal material is broken up by means of a wooden applicator, and the tube filled to near the top with zinc sulphate solution. It is now centrifugalized for 90 seconds at full speed. The diagnostic material will be found to be floating on the surface film and can be removed on to a slide by the loop removal technique. This surface film is lifted off by a bacteriological loop, 5 mm. in diameter. This is inserted vertically at one side of the meniscus, turned horizontally, moved to the centre and removed vertically. Three loopfuls are thus removed to a clean glass slide, one drop of D'Antoni's iodine added

(Lugol's iodine solution may also be used) and a coverslip applied.

The zinc sulphate solution is made by adding 331 grm. of granular $ZnSO_4,7H_2O$ U.S.P. to a final volume of one litre of distilled water.

The ordinary hand centrifuge will give quite satisfactory results, the only change in technique being to double the times mentioned for spinning the specimens.

Infection by these protozoal cysts is always by ingestion, the contamination of food or water coming from carriers. Only two species of intestinal protozoa are known to be pathogenic, *Entamœba histolytica* and *Balantidium coli*, the latter occurring very rarely in man and not occurring at all in the present survey. While practically all the forms of protozoal cysts encountered were non-pathogenic in character, it must be realized that the incidence of protozoal infection is related directly to the efficiency or otherwise of sanitary arrangements. Wherever there is the possibility of food and water being contaminated with fæcal material, either directly or indirectly by flies, the incidence of infection by intestinal protozoa will be high.

The incidence of the various types of intestinal protozoa varies considerably with the locality. In this series, only five cases (1%) were found to harbour the pathogenic *Entamœba histolytica*, the cause of amœbiasis. However, in other countries, particularly the tropical lands where sanitation and hygiene are on a much lower scale, the incidence of *E. histolytica* is much higher. In dealing with the incidence of infection by this form Craig[2] states: "I believe that it is fair to conclude from figures that approximately 10% of the population of the United States are infected with this parasite."

A reference to the incidence of infection with *E. histolytica* in foreign countries (many of which are in the battle zones) indicates that an even higher percentage of the general population is infected.

It is true, therefore, that the potential danger to health from this infection is considerable and that amœbiasis constitutes an important problem in preventive medicine likely to be encountered in troops in tropical areas. This conclusion is made because, if approximately half of our men can become infected with cysts in this country, where sanitation is considered good, it may possibly be assumed that a considerable number may become infected with the pathogenic forms in lands in which there is a native population amongst whom proper health measures are difficult to enforce and personal hygiene is often very poor.

Although *E. histolytica* is a tissue parasite, dysentery and other serious symptoms of amœbiasis may not occur. When the cysts of *E. histolytica* are found in apparently normal persons, it is impossible to say whether these individuals are suffering from an early or latent form of the disease. Some observers believe that whenever *E. histolytica* is present in man, it gives rise to intestinal lesions of some degree. Others hold that the infection may be of such a mild nature that it produces practically no symptoms and no intestinal lesions, and only the lowering of the patient's resistance through some intercurrent disease may cause the infection to flare up.

It may be that a state of equilibrium exists in carriers,[3] the process of tissue regeneration balancing the tissue destruction of the infective amœbæ. Sapero and Johnson[4] point out that it has yet to be shown what are the determining factors necessary for the development of actual amœbic dysentery in an apparently normal carrier. Dobell and Melleney[5] believe that no more than 10% of persons who become infected with *E. histolytica* suffer to any appreciable extent from their infection. Craig,[6] on the other hand, believes that at least 50% of carriers suffer from symptoms many of which may be mild in character. He states that the most common symptom noted was constipation, with occasional attacks of diarrhœa, usually mild but sometimes accompanied by pain. Other symptoms noted by Craig included loss of appetite, tenderness in the right iliac region and over the descending colon in deep pressure; dull pain in the lower abdomen, flatulence and abdominal distension. Many carriers also present symptoms referable to the nervous system, of the neurasthenic type. D'Antoni[7] states that, even though symptoms are not recognized they are present in most cases. He has classified amœbiasis in the following way, noting that lesions are predominantly in two areas, namely cæcum-appendix and rectum-sigmoid.

1. *Asymptomatic amœbiasis.*—Patient not cognizant of symptoms with lesions not confined to specific areas. The abandonment of the term "healthy carrier" is recommended, as connoting non-pathogenicity of amœbiasis.

2. *Symptomatic amœbiasis.*—(*a*) Asyndromic. Mild toxæmia and vague gastrointestinal irritation, with lesions not confined to specific areas. (*b*) Syndromic. Symptoms simulating chronic appendicitis, peptic ulcer, chronic cholecystitis, with lesions usually confined to

cæcal area. (*c*) Dysentery (acute and chronic). Symptoms of dysentery, with lesions throughout the colon, especially rectum and sigmoid. (*d*) Hepatitis and liver abscess. Fever, pain and tenderness in the liver area, with lesions in liver tissue. (*e*) Involvement of other organs. Abscess of brain, lung, kidney, amœbiasis, cutis.

The symptoms, as can be judged from this excellent classification, may be quite varied and may simulate various other diseases.

The examination of specimens of stool for *E. histolytica* in cases that present vague undiagnosed intestinal symptoms or atypical symptoms of appendicitis, peptic ulcer or chronic cholecystitis, should be a part of our differential diagnosis. Such a repeated examination should disclose a considerable proportion of those persons infected with *E. histolytica,* while examination of stools passed after saline purgation and sigmoidoscopic examination should add to these numbers.

The need for such examination will become accentuated in the future, when men who have been in the tropics, return to this country.

The actual rôle that persons, particularly food handlers, assume in the dissemination of cysts of *E. histolytica* is a matter of considerable controversy and is by no means settled.

Sapero and Johnson[4] concluded as a result of their studies on U.S.A. Naval personnel in the Panama Zone that food handler dissemination could not be of common occurrence. However, Schoenleber[8] has criticized their work and at the same time has furnished strong evidence that food handlers may be effective transmitters of *E. histolytica.*

It seems likely on the evidence that infected food handlers should be placed in this latter category and that, even though they may present no symptoms of harbouring *E. histolytica,* they should be treated until the cysts disappear. Possibly the same attitude should be adopted towards any *E. histolytica* carriers, regardless of whether they handle food or not. Certainly, they may be potential sources of danger, and, if we can take Schoenleber's results as criteria, active measures to free the carriers of their cysts should produce good results.

From our survey, while covering a relatively small number of cases, coming from different parts of Canada, but largely from the Province of Quebec, one might surmise that the incidence of *E. histolytica* amongst our general population is quite small. It should be our aim to keep it in such a state. Stool examinations, particularly of troops who have been or will in the future, be stationed in the tropical zones, might be carried out, with the idea of eliminating as many *E. histolytica* cyst carriers as possible. Of course, such an examination may well be outside the scope of practical application.

However, since every individual harbouring pathogenic parasites may be a hazard for the community as well as for himself, the necessity of eliminating this danger is obvious from the public health point of view.

CONCLUSIONS

1. Approximately half the men in this survey were found to have some form of protozoal cyst, which means that at some time, they have been exposed to relatively fresh fæcal contamination of food or water supplies.

2. The frequency of such infections in this country, where sanitation is considered good, emphasizes the great problems associated with the prevention of dysenteric disorders or diseases of bad hygiene, in the tropics, where it is difficult to obtain and enforce the essentials of good sanitation.

3. Some problems associated with the pathogenic protozoal cyst, *E. histolytica,* are discussed briefly.

The authors wish to express their appreciation to Dr. T. W. M. Cameron, Director of the Institute of Parasitology, under whose direction this survey was carried out. Also to Dr. W. D. S. Cross, and staff of Ste. Anne's Military Hospital for their co-operation.

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More than three tons of quinine, about nine million doses of five grains each, were presented to the Armed Forces by the American Pharmaceutical Association recently. The collection of quinine was begun last February by thousands of American druggists. The quinine will be reprocessed at Navy laboratories and made available immediately to men in uniform.—*Drug Merchandising*, October 15, 1943.

ANTEPARTUM HÆMORRHAGE*

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THE present review is a study of 262 cases of antepartum hæmorrhage in 10,965 deliveries for the years 1928 to 1940, inclusive, in the public ward at the Burnside Department of the Toronto General Hospital.

It is always necessary to include in discussion both accidental hæmorrhage and placenta prævia if either condition is described. Neither can be diagnosed without actively excluding the other, and either condition must be present if uterine hæmorrhage is occurring in the latter half of pregnancy, with few exceptions. These rare exceptions may be mentioned briefly, only to be dismissed; the bleeding from a cervical polypus, cervical cancer, and the excessive flow sometimes seen at the onset of labour.

The problem of antepartum hæmorrhage, then, is the problem of the two major conditions, both of which steadily contribute a large percentage to the maternal mortality rate and result in a constantly high infant loss. The problem remains a generic one until the two conditions are definitely distinguished. Only by the determination of the type of placental separation can treatment be made intelligent; and, for this differential diagnosis and the subsequent treatment, hospital procedures and facilities are necessary. Statistical studies show a lowering in the past few decades in the mortality from antepartum hæmorrhage and, in general, this improvement is due to the recognition of the dangers inherent in any antepartum bleeding, the importance of the diagnosis of the type, and the urgent value of hospital care for all expectant mothers who begin to bleed in the later months of pregnancy.

The series of cases of antepartum hæmorrhage for the years 1928 to 1940 inclusive, at the Burnside, have been analyzed according to type of condition, treatment, and result, but before presenting these, the general principles which have guided the staff responsible for them may be summarized.

Nothing significant can be said about prophylaxis except to emphasize the value of general prenatal care. We cannot prevent the occurrence of the underlying conditions which produce the initial hæmorrhage; but, unlike the patients suffering from early pre-eclamptic symptoms, hæmorrhage patients usually report their first warning, and thus the responsibility of averting tragedy is placed early in the drama upon the attending physician. He cannot afford to ignore any bleeding, however slight; and it is noteworthy that the amount of the first warning bleeding is no criterion of the gravity of the condition or indication of the nature of the treatment required.

TABLE I.

CASES BEGINNING WITH SLIGHT BLEEDING

Spontaneous	15
Bag	12
Section	10
Version	6
Forceps	2
Packing	1
Total	46

In 94 cases of placenta prævia from 1933 to 1940 (Table I) 48 had profuse bleeding from the beginning while 46 had at first only slight bleeding. Of these 46 cases 8 were complete placenta prævia, and in 10 Cæsarean section was employed. The patient reporting the warning bleeding should be at once sent to hospital. This rule is the way of safety. It may indeed result in the admission of patients who can be proved not to have placenta prævia and in whom the complete absence of findings makes the diagnosis of merely a slight or healing placental separation one of inference only. Such a patient may require no treatment and consider her admission and investigation as needless trouble and expense. In at least 5 of the 8 fatal cases in this series, the tragic outcome might have been avoided if the patient had been sent to hospital more promptly after the first warning.

The routine procedure on admission should be standardized and include the following steps: (1) Typing and selection of donors; (2) a careful and complete physical examination; (3) the vaginal examination in a well equipped delivery room where whatever treatment is indicated can be carried out without delay.

If the patient is not at term and the bleeding not persistent the vaginal examination may be deferred to permit the child to mature but such

* A paper read at the Seventy-third Annual Meeting of the Canadian Medical Association at Jasper Park, Alta., June, 1942.

a patient should be kept in hospital. Of this investigation the most important is the vaginal examination which must usually be made before either the type of placental separation can be detected or the most suitable method of treatment chosen. In some few cases, the election of Cæsarean section may be made without a vaginal diagnosis; and, in others, when the bleeding has ceased, there is time for x-ray investigation; but, to prove the final diagnosis, examination *per vaginam* is usually necessary.

Until the diagnosis is established, there can be no differentiation in treatment, but certain principles of management may be outlined. If on admission the patient is suffering from shock or hæmorrhage, immediate steps to combat these can be taken while the investigation is proceeding and saline or blood transfusion given. If the hæmorrhage has ceased temporarily any disturbing examination which might initiate further bleeding may be postponed until the patient's condition has improved. If, however, the hæmorrhage is proceeding, the treatment of the shock and the effects of the blood loss must be accompanied by immediate and active steps to stop the bleeding. This means a prompt vaginal investigation and whatever radical vaginal procedures are necessary. Certainly, the immediate performance of Cæsarean section on the shocked patient is fraught with grave danger.

If on admission, the patient is not shocked or suffering acutely from loss of blood, and the bleeding has at least temporarily ceased, a more deliberate management is to be preferred. If the bleeding is continuing, however, the decision between vaginal or abdominal delivery must be made without delay. Should Cæsarean section be chosen, if necessary the continuous profuse loss may require to be checked by packing while waiting for the necessary preparations to be made. The use of vaginal packing to arrest hæmorrhage while the patient is being transported to hospital is the only other indication for this method. If the bleeding has stopped, a deliberate routine investigation may be proceeded with and this may now include x-ray investigation as a means of diagnosis of the utmost value. The recent method of soft tissue technique devised by Vaughan and his technical associates[1] at the Hamilton General Hospital has made x-ray diagnosis of placental implantation reasonably exact, in marked contrast to the unreliable earlier methods, the thorotrast and the potassium iodide cystogram technique among others.

In the cases where a deliberate study can be made, it now appears possible by this method to detect and control placenta prævia without subjecting the patient to the hazards of a needless vaginal examination in those cases where a closed cervix renders it almost useless. It also enables one to discharge from hospital the patient who has some slight bleeding, some weeks perhaps from term, because if we can exclude placenta prævia in such a case there will be no longer anything to be gained by further hospitalization. It should also prevent us from performing section in the patient who does not require it. If the new developments in soft tissue technique fulfil their promise a new era in the management of antepartum hæmorrhage will have been begun. It will be noticed that so far the subject has been discussed generically as antepartum hæmorrhage, no mention being made of the type; as, until investigation is complete, a specific choice of the methods of treatment available cannot be made.

The incidence of antepartum hæmorrhage in this series for the past 13 years will be seen in Table II.

TABLE II.

ANTEPARTUM HÆMORRHAGE, 1928 TO 1940

Total deliveries	10,965	
Antepartum hæmorrhage	262	2.3 %
Accidental hæmorrhage	114	1.03%
Placenta prævia	148	1.4 %
Maternal mortality	8	3.0 %
Total infant mortality.....	105	40.0 %

In 10,965 deliveries, antepartum hæmorrhage occurred 262 times, of which accidental hæmorrhage was diagnosed in 114 cases, and placenta prævia in 148. The combined maternal mortality was 8 or 3% and the total infant mortality 105, or 40%. Cases of excessive show in labour, which, after delivery are obviously not due to placental separation of either type, are not included. The total incidence of antepartum hæmorrhage (about 2.5%) is of course much greater than in private practice.

The diagnosis between placenta prævia and accidental hæmorrhage is usually readily made. In placenta prævia, painless hæmorrhage before the onset of labour, a uterus normal in tone, not tender, and not distended, a presenting part often unengaged and sometimes abnormal, an audible fetal heart, all these are characteristic. In accidental hæmorrhage there are usually

pains distinct from labour pains, a uterus hard, tender, sometimes distended, and usually a normally engaging presenting part; and, in severe cases shock out of proportion to the vaginal blood loss and evidences of intrauterine death of the child. Albuminuria in a large number of cases (actually 50% in this series) indicates the presence of toxæmia. The ultimate diagnosis, as already noted, can be made only after a vaginal examination; and, occasionally even by this means it may be impossible to state whether the placenta is or is not normally situated. It may be noted that it is inadvisable to make undue efforts to feel the placenta if it is not readily palpable at the internal os.

Before considering the 148 cases of placenta prævia the method of classification should be noted. There has been considerable confusion in the terms central, lateral, and marginal. Lateral and marginal have been interchanged in various textbooks and in hospital records, and it is obvious that a placenta may appear central with beginning dilatation and with further dilatation present an area of membrane beyond its edge. The difference between lateral and marginal is one of guess work usually, and from a practical viewpoint makes little difference. It is suggested that a more satisfactory classification would be complete and incomplete, the latter being divided into the cases where the placenta is palpable and where it cannot be palpated.

TABLE III.

CLASSIFICATION OF PLACENTA PRÆVIA, 1933 TO 1940

Complete placenta prævia		20
Incomplete placenta prævia		74
Palpable	50	
Non-palpable	24	
Total		94

In Table III, the 94 cases occurring from 1933 to 1940 have been classified on this basis and it will be seen that in one-third of the incomplete cases the placenta was not palpated. In these latter, the diagnosis was, of course, one of inference only, although confirmation in some cases was obtained by examination of the placenta post partum.

In Table IV the methods of treatment of complete placenta prævia are shown: 29 of the 43 cases were treated by Cæsarean section. While in general it may be stated that section is always to be preferred where the placenta prævia

TABLE IV.

COMPLETE PLACENTA PRÆVIA, 1928 TO 1940

Treatment	*No.*	*Deaths*	
Cæsarean (classical)	25	1	(intestinal obstruction)
Cæsarean (low)	4		
Bag	4		
Version	6		
Spontaneous	3		
Undelivered	1	1	(hæmorrhage)
Total	43	2	4.6%

is complete, the absence of mortality in the cases treated more conservatively would indicate that there are exceptions occasionally; especially in the early weeks of the last trimester, the presence of advanced dilatation when the patient is first seen may make immediate version or the insertion of a bag practicable; and, again, immediate section is always contraindicated if the patient is badly exsanguinated or shocked, more conservative treatment being the only alternative. Three of these patients had spontaneous deliveries without severe loss of blood; but none of them were more than 6½ months pregnant, and in two, intrauterine death of the fetus had occurred some time before the onset of the labour.

TABLE V.

INCOMPLETE PLACENTA PRÆVIA, 1928 TO 1940

Treatment	*No.*	*Deaths*	
Medical induction	6		
Rupture of membranes or Spontaneous onset	57		
Vaginal packing	2		
Bag	24		
Internal version	9	2	
External version	1		
Cæsarean (high)	4		
Cæsarean (low)	2		
	105	2	(1.9%)

Table V indicates the treatment in 105 cases of incomplete placenta prævia. It is noteworthy that of these only 6 were treated by section. Of the remaining cases, 57 required no active treatment other than rupture of the membranes, 24 were treated by bag, and 9 by internal version. It will be seen the bag has been preferred to the alternative type of version—the Braxton-Hicks; and it is noted that the mortality is in the two cases of version by the Braxton-Hicks method. Apart from hospital facilities when a bag is not available the Braxton-Hicks version is a valuable substitute.

TABLE VI.

MATERNAL MORTALITY IN PLACENTA PRÆVIA, 1928 TO 1940

Total cases		148
High section obstruction		1
Died 20 minutes after admission (undelivered)		1
Braxton-Hicks version, died of hæmorrhage		1
Pulmonary embolism on 23rd day after version		1
Total deaths	2.7%	4

In Table VI, the maternal mortality is shown. In only one of these patients might it be considered that perhaps an alternative treatment would have prevented a fatality. The patient who died from the effects of hæmorrhage shortly after version was first seen suffering from severe blood loss with two fingers' dilatation and an incomplete but palpable placenta prævia. As the patient was bleeding freely on admission, she was transfused and a combined version was promptly and readily completed. The delivery followed in due course and the patient seemed in fair condition for a few hours, when without apparent cause and in spite of additional transfusion she collapsed suddenly and died. It is of course possible that she might have survived Cæsarean section; but her poor condition on admission and the insidious development of shock after what was apparently a successful delivery make this improbable. It may be noted that in this case, as in many others, the first warning bleeding occurred several days before admission.

TABLE VII.

STILLBIRTHS AND NEO-NATAL DEATHS IN PLACENTA PRÆVIA, 1928 TO 1940

Treatment	*No.*	*Mortality*	*%*
None except rupture of membranes or medical induction	67	10	14.9
Cæsarean	35	8	22.8
Bag	28	15	53.5
Internal or Braxton-Hicks version	15	9	60.0
External version	1	1	100.0
Vaginal packing	2	2	100.0
Total	148	45	30.0

In Table VII appears the infant loss in the 148 cases. It is to be remarked that the lowest mortality occurs where no active treatment is necessary or merely rupture of the membrane is employed. In 35 Cæsarean sections there were 8 infant deaths, the causes being prematurity, atelectases or mal-formations. The mortality is high in the case of either the bag or version.

There has been in recent years an increasing tendency to treat placenta prævia by Cæsarean section. If we had to select one method only, Cæsarean section would give the best results, but it would undoubtedly lead to its employment in many cases not placenta prævia. In other words the indiscriminate use of Cæsarean section for antepartum hæmorrhage is needlessly radical; and, if, as in this series, the results with less radical methods are as good as in series with a higher incidence of section, the avoidance of unnecessary sections is worth achieving. It is noted that in the 4 deaths, one was delivered by Cæsarean section and, in the other three, section would not likely have prevented the fatal results; and, also, that in the 35 Cæsarean cases, the fetal mortality was 22%.

The elective routine followed in this series may be summarized as follows: hospital admission, prompt blood typing and selection of donors, a complete history and examination as a routine pattern, the vaginal investigation being carried out in a fully equipped delivery room. When the bleeding is slight or has ceased, x-ray examination by the new methods is of great value.

Cæsarean section is contraindicated if the patient is in shock, otherwise, it is to be chosen in all complete placenta prævia cases and usually whenever an incomplete prævia occurs in a primipara not in labour. If when the condition is incomplete and the cervix is softening, effaced, and dilating, rupture of the membranes (with or without pituitary extract), to let the presenting part impinge against the placenta, or the substitution of a bag or version is indicated. If the baby is dead the indications for conservative methods may be enlarged, especially if there has been time for thrombosis at the utero-placental attachment to occur. The most important factor in determining treatment is the condition of the cervix. Adequate facilities for prompt and repeated transfusions are essential.

TABLE VIII.

ACCIDENTAL HÆMORRHAGE

Treatment	*No.*	*Died*
Conservative (including rupture of membranes and forceps delivery)	96	1 (anuria)
Bag	3	1 (sepsis)
Version	2	
Cæsarean, classical	6	1 (cardiac failure)
Porro	4	
Undelivered (transfused 4 times)	1	1
Total	114	4 3.2%

The treatment of the accidental hæmorrhage cases is shown in Table VIII. In 114 patients, Cæsarean section was employed ten times, with one death attributed to postoperative heart failure. Of the other 104, with exception of version twice and a bag on three occasions, all were treated by simple rupture of the membranes, transfusion where indicated, delivery spontaneous, and forceps when the cervix was fully dilated.

There has been an increasing tendency of late years to resort less and less to section in accidental hæmorrhage and this is true of this series, although the extreme view that section need never be employed in these cases has not been followed. In this series, Cæsarean section has been chosen in two types, in the milder type where the baby is still alive and where labour has not begun. In these cases of which there are two examples, the section was done primarily in the interest of the child. Section also has been chosen in the types at the other extreme of severity; the so-called cases of uterine apoplexy in which the uterine musculature has been so damaged that its function has been destroyed, the internal bleeding continuing with increased size of the uterus. Such cases requiring section are rare, and there are those who believe that conservative treatment would give equally good results even in these.

Of the 4 fatal cases perhaps the only one in which an alternative treatment might have been better was the death from sepsis following bag insertion.

TABLE IX.

STILLBIRTHS AND NEO-NATAL DEATHS IN ACCIDENTAL HÆMORRHAGE

No.	*Treatment*	*Mortality*	*%*
10	Cæsarean	8	80.0
104	Conservative	53	50.5
114		61	54.0

The infant loss in accidental hæmorrhage was over 50%, being naturally higher in the cases delivered by section as these were those of extreme gravity often with complete placental separation.

One might summarize as follows the treatment of accidental hæmorrhage: (1) Transfusion and morphia where indicated; (2) Cæsarean section: (*a*) in early mild cases where the baby is viable, still living, if the mother has lost other children from the same cause, and (*b*) in "uterine apoplexy" if the uterus is enlarging and the cervix shows no signs of yielding. (3) All other cases: (*a*) rupture of membranes; (*b*) tight binder; (*c*) warmth; (*d*) repeated transfusion if necessary; (*e*) delivery by forceps or version when dilatation is complete; (*f*) appropriate measures to combat toxæmia when present.

It is our opinion that a bag is rarely if ever called for in accidental hæmorrhage. If the membranes are ruptured the external hæmorrhage usually ceases; and, if the internal hæmorrhage continues, only the returning uterine tone can control it, the presence of the bag, by preventing the escape of fluid, tends to increase uterine distension. If the case is mild the bag is unnecessary if the membranes are ruptured; and, if of the severest type, the bag may do harm. In the fatal case following bag insertion the decision to use it was based on the mistaken diagnosis of placenta prævia. Unless Cæsarean section is contemplated prompt rupture of the membranes is an essential step in all cases, as this permits the embarrassed uterus to diminish its bulk, thereby tending to stop the bleeding, and this procedure tends to expedite labour. When this valuable step is omitted in a case of any gravity, precious time is lost and the delay in labour then permitted may be the determining factor in a tragic result. Failure to ensure that the membranes are no longer intact is a culpable omission.

TABLE X.

CÆSAREAN SECTION FOR ANTEPARTUM HÆMORRHAGE, 1928 TO 1940

	No.		*Mortality*
Total deliveries	10,965		
Total sections	296	(2.6%)	
Sections in 148 cases of placenta prævia	35	(23.5%)	1
Sections in 114 cases of accidental hæmorrhage ..	10	(8.6%)	1
			2

In Table X the proportion of Cæsarean sections performed for antepartum hæmorrhage to the total number for the 13 years under review is shown and indicates that in this series the general tendency in most clinics to employ section more in placenta prævia and less in accidental hæmorrhage has been followed.

A series of reviews taken at random from the literature as shown in Table XI, would indicate that a wider employment of section in placenta

TABLE XI.

PLACENTA PRÆVIA

Name	No.	Mortality Maternal %	Mortality Fetal %	Cæsarean incidence %
Trillat[2]	104	10.0	67.0	9.4
Findley,[3] 1922 ...	4,627	7.7	55.0	6.0
Benaron[4]	10,323	5.5	31.0	30.0
" 1922-1931	31,935	6.9	50.0	15.0
Irving,[5] 1916-1924.	105	7.0		3.0
" 1924-1930.	103	11.0		27.0
" 1930-1935.	100	2.0		56.0
Siegel[6]	332	3.6		65.0
Bill,[7] 1931	104	1.9	30.0	81.0
Burnside	148	2.7	30.0	23.0

prævia has definitely lowered the maternal mortality; the lowest mortality reported being in a clinic where the largest number of cases (81%) were treated by section. This rather extreme procedure is justified only if more conservative methods cannot equal the results. But, if, as in the series reviewed, a Cæsarean incidence of only 23% can almost equal the low mortality, it might be assumed the lower incidence is nearer the optimum than the higher. In other words, in this series a low mortality has been achieved without unduly raising the incidence of section.

TABLE XII.

ACCIDENTAL HÆMORRHAGE

Name	No.	Mortality Maternal %	Mortality Fetal %	Cæsarean incidence %
Weymeersch[8] (Brussels)	1,080	9.0	65.0	22.0
Gordon[9]	65	7.7	67.0	20.0
Brooke[10]	2,319	6.3	66.4	12.5
Burnside, T.G.H...	114	3.4	54.0	8.6
McCord[11]	92	6.5		0.0

A similar random series of reports in accidental hæmorrhage is shown in Table XII, where the lowering of the incidence of section parallels improvement in the mortality figures. In this regard the series shows the same tendency.

SUMMARY

1. Two hundred and sixty-two cases of antepartum hæmorrhage treated by the group of attending staff obstetricians are reported.

2. A standard, but elective, routine in the investigation of these problems is advocated.

3. The importance of vaginal examination but only when performed under ideal conditions is emphasized.

4. The value of the soft tissue technique in radiographic diagnosis is stressed.

5. The incidence of Cæsarean section in placenta prævia was 23.5%, in accidental hæmorrhage, 8.6%—this incidence following the prevalent trend.

I gratefully acknowledge the help rendered by the late Dr. George Hendry in the preparation of the statistical material.

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CANCER OF THE LARYNX*

(With Observations on 103 Cases)

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DURING the past generation much attention and study have been given to the subject of cancer in man. The laryngologist has not been backward, and during this period numerous articles have been published on this disease as seen in the larynx. To the average patient the disease seems to appear suddenly as a "bolt from the blue" in an otherwise healthy organ, but the surgeon knows otherwise. Research workers tell him that the intracellular change which leads to the unrestricted and infiltrative growth of the cancer cell has been going on for a long time and is the same for all tissues and all organs. This pathological change in the cell is really only one factor in this very complicated problem.

Age seems to be an important factor. Our youngest patient was 37, our oldest 84; two-thirds of the cases were between 50 and 70, the disease progressing almost in direct proportion to the age of the patient. Age alone does not offer a satisfactory explanation for the disease, since it has been proved experimentally that cancer can be produced in the young cell as well as the old. Cramer[1] thinks that a carcinogenic agent acting on the exterior of a

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cell for a certain time in a susceptible person produces pathological changes in the interior of the cell, such as increased cell division, and these changes transform the cell into a malignant one. The older the organism therefore, the more liable it is to malignant changes. One might expect that an older individual would be subject to multiple lesions and that early treatment of a single growth would be useless because of the liability of other independent growths to develop in other organs. This is not borne out clinically, as cancer appears to create a certain amount of immunity in other organs, and if the original focus can be completely eradicated the individual may survive for years.

This immunity may not last long however. In only three of our patients did more than one independent growth develop. One had a primary growth successfully removed from the soft palate but succumbed three years later from a cancer on the opposite side of the larynx. Another elderly woman had a basal cell carcinoma of the nose which was successfully treated. Four years later she developed a cancer in the larynx and shortly afterwards developed another lesion in the breast. Still another woman had simultaneous lesions in the larynx and breast.

Sex is another factor to be considered in cancer of the larynx. In our group males were affected almost 6 times as frequently as females, 87 males and 16 females. Most of the males were smokers; many heavy smokers, and many had very septic teeth. Now that many women are quite heavy smokers it will be interesting to observe whether smoking will produce an increase in the incidence of laryngeal cancer in women.

Use of the voice, or, maybe a better term, abuse of the voice, does not seem to be an important factor, for our patients seemed to have a great variety of occupations. In only three of our group did we get a history of more than average use of the voice.

In only one case was cancer found to develop in an old tuberculous larynx and a positive Wassermann reaction was a rare finding in this group.

During the five-year period, 1920 to 1925, 31 cases of cancer of the larynx applied for admission to the Toronto General Hospital, and during the period 1935 to 1940 we had 33. This slight increase is more than offset by the increase in the total number of patients admitted, so that the incidence of cancer is fairly constant.

Cancer arising in the interior of the larynx tends to grow slowly and may remain localized for months before invading the neck or neighbouring glands. But when it originates outside the orifice of the larynx it is much more malignant and invades the surrounding tissues and glands at a much earlier stage. This important clinical difference between the two areas suggested to Krishaber the natural classification of *intrinsic* and *extrinsic*. Much discussion has taken place and many attempts have been made to modify this classification, but it will always remain satisfactory to me. A rough line has to be drawn somewhere between the two and the most reasonable place for this line seems to be the false cord. Lesions below this line, including the subglottic growths, should be classified as intrinsic, whereas growths above and outside of this area, including mixed growths, should be considered as extrinsic.

In our group only one growth was diagnosed as sarcoma, all the rest being epidermoid carcinoma. The tumours varied to some extent pathologically, but our pathologist, Dr. W. L. Robinson, feels they could not be classified as in Broder's classification, except perhaps as differentiating or non-differentiating cell-types.

Unfortunately most of our patients arrived so late and the growths were so extensive that it was almost impossible to be sure where the growth originated. We agree with MacKenty who in 1922 said: "Judging from the advanced condition of the great majority when they come for treatment, the diagnosis of cancer of the larynx must be extremely difficult or poorly understood by the profession". In the earlier cases it was noted that the favourite site was on the anterior part of one vocal cord. The growth usually extended forward along the cord and tended to cross the anterior commissure to the opposite cord. Later on, ulceration took place and as the surrounding tissues became infiltrated fixation resulted. This fixation and infiltration meant that the growth was of long standing and extensive. In no instance did another growth develop by contact on the other cord.

Constant and persistent hoarseness was the most common symptom complained of, although in several extrinsic cases the growths had ad-

vanced considerably before any symptoms were noted, and in six cases large glands in the neck were the first changes observed. Pain, dysphagia, dyspnœa and cough were among the late symptoms.

The differential diagnosis has to be made from innocent tumours and from simple and specific types of inflammation. Lues seems to be a rare difficulty and a positive Wassermann reaction was most uncommon. The most confusing lesion was tuberculosis, but, as diagnosis is so important, a biopsy should be done in all doubtful cases. This is best done by suspension laryngoscopy, using Lynch's instruments and general anæsthesia. In this way the extent of the lesion can be thoroughly studied before the biopsy is taken. Great care must be observed in making a biopsy, not only to protect the larynx, but to be sure that the biopsy is taken from a thoroughly representative portion of the growth. In spite of all this care a negative biopsy was reported three times in this series, and a later biopsy, some months after, proved to be positive for cancer. In the meantime much valuable time had been lost.

Malignant disease of the larynx, if left untreated, inevitably ends in death either from asphyxia, dysphagia, hæmorrhage or a terminal pneumonia. In this series, the average duration of life from the earliest symptoms to the time of death was seventeen months. In our present state of ignorance prophylactic treatment of this disease is chaotic, except perhaps that our patients should be warned against septic mouths and excessive smoking.

The real treatment must be radical. It may be accomplished by surgery or radiation. The growth must be excised, together with at least a quarter of an inch of healthy tissue in all directions, or it must be completely sterilized by radiation. It is here that a difference of opinion may arise. It may be impossible to obtain an unbiased judgment from one trained either as a surgeon or as a radiologist. I admit I had a strong bias toward surgery, but judging by results from radiation seen during the past five years I have greatly modified my view. The cases which are most suitable for operation also seem to be the most suitable for radiation, and when one fails the other fails. They are not complementary, and combined treatment seems to get nowhere.

So far as palliation is concerned, and palliation is important, surgery has nothing to offer apart from tracheotomy or perhaps gastrostomy. Radiation on the other hand has much to offer. After the initial radiation reaction which may be rather severe, the patient usually feels much better, the symptoms are much relieved and occasionally a cure results in an otherwise hopeless patient. Surgery has much to offer in early cases and here one makes a plea for early diagnosis. Of 103 patients with cancer of the larynx admitted for treatment only 9 were considered suitable for laryngofissure, and even in these the growth was found at operation to be much more advanced than was thought at the time of suspension laryngoscopy. Of the 9, one refused treatment, one died 24 hours after operation from massive lung collapse; 4 had recurrences and died within 2 years; 1 died of cardiac disease within two years but without recurrence; and 3 are alive and well from 3 to 10 years later. In other words we were only successful in eradicating the disease in 4 out of 8 patients.

Nine patients were advised to have laryngectomy and of these 4 refused operation; 2 had recurrences after operation and died in less than two years; 3 others are alive and well, 2 for 5 years and 1 for 16 years; 3 of 5 who were operated on may be considered cures. Two patients had windows made through the thyroid cartilage and radium needles implanted in the growth; both had recurrences and died shortly afterwards.

These results, while not brilliant, are impressive. A better selection of cases and an improvement in technique which has taken place in our later cases, shows a definite improvement. Better results are reported elsewhere. Jackson,[2] Clerf,[3] Tucker,[4] New,[5] Thomson[6] and others claim 80% cures following laryngofissure.

I am strongly of the opinion that in a healthy patient with an early lesion limited to one vocal cord or perhaps extending to a limited extent to the other cord and without extension into the neck, laryngofissure is the treatment of choice and does not produce much mutilation. Radiation also might cure such a patient, but it is very difficult to prognosticate the cases that do well with radiation. One such case recently died in our ward. He had a lesion involving the anterior half of one cord with a small extension to the other cord, and no enlarged glands in the neck. It was decided to use radiation instead of operation but

he had a very poor reaction to radiation. There was marked œdema of all the tissues of the glottis, requiring a tracheotomy. The growth progressed and he finally died 14 months after the first complaint of symptoms. Laryngofissure might have saved this patient, and certainly laryngectomy could have removed all the growth. When a patient has a lesion involving both cords, the false cords, the base of the epiglottis, or maybe the aryepiglottic fold he should be offered the choice of radiation or laryngectomy. Laryngectomy still has a place in laryngeal surgery, but is rapidly becoming an obsolete operation. No patient has chosen laryngectomy or has been urged to have the operation since 1937.

Extrinsic lesions involving the outer part of the larynx and extending to the pharynx including retro-cricoid growths are not good surgical cases and are better treated by radiation.

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MEDICAL CLASSIFICATION OF R.C.A.F. GROUNDCREW ON THE BASIS OF FUNCTIONAL REQUIREMENTS

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THE primary function of the R.C.A.F. in Canada is one of training aircrew on a mass basis. The complexities and scientific requirements of aircrew training, however, necessitate the employment of large numbers of non-flying personnel to maintain a constant flow of well-qualified aircrews to the actual theatres of operations.

It has become increasingly evident that the medical standards for groundcrew trades in the R.C.A.F. require revision. The standards were originally designed in peacetime for the purpose of selecting individuals for lifetime employment in the Service, and, the higher physical requirements were set, the greater became the insurance against premature physical breakdown during Service life. Since the outbreak of war these standards have been modified from time to time to satisfy certain particular demands, but their basic structure has remained the same, with the result that groundcrew physical requirements have been, for all practical purposes, as rigid as those for active combatant duties. As a result, many skilled tradesmen who have been doing an efficient job in civil life have been rejected on medical grounds at recruiting centres, when applying for enlistment in the corresponding R.C.A.F. service trade. When one realizes the heavy drain on the nation's manpower by the armed Forces and industry, and the fact that the enlistment of physically sub-standard individuals in groundcrew trades will release fit personnel for training in aircrew, any sane reduction in the present arbitrary and highly selective standards that will permit the efficient employment of men at present unacceptable, is highly desirable.

Recognizing this urgent need, the R.C.A.F. medical service was faced with the problem, in addition to categorization for general health purposes, of devising a new method of classifying physically handicapped individuals, so that they could be placed in R.C.A.F. trades in which they would be effectively employed without lowering the general efficiency of the service as a whole.

In appreciation of the task, there appeared to be two major considerations for a properly adjusted selection program. In the first place, such a program must select men primarily on the basis of functional efficiency in respect to the particular duties which have to be undertaken. For example, a man with a totally disabled arm could easily perform all the duties of a radio telephone operator, but would be of no use whatever as a motor transport driver. Conversely, an individual with a speech defect would be handicapped as a radio telephone operator, but could perform the duties of a motor transport driver quite efficiently. In order, therefore, to prevent misemployment, the physical requirements of every ground trade in the R.C.A.F. must be determined. In the second place, it at once became obvious that a more comprehensive system of classification was re-

quired to provide for the tremendous variation in physical requirements for the different trades. It must, in addition, present to the executive branch of the Air Force, whose function it is to place men in their appropriate service trades, the limits of an individual's employment.

Bearing in mind these considerations, a complete medical survey, or "job analysis", of all the ground trades in the Air Force was conducted. The conception of "job analysis" is not a new one; it only remained to adapt its fundamental principles to the needs of the R.C.A.F. Each trade was investigated separately, observing the tradesmen at their work under all conditions, and on all types of stations throughout the Service. The physical requirements for the work were discussed with the men themselves and with their officers, and, based on total information, a table of minimum physical requirements was drawn up for each trade.

From the outset of the work, it was evident that functional efficiency depended mainly on six primary considerations: (1) visual acuity; (2) colour vision; (3) hearing; (4) hands; (5) arms; (6) legs. For each of these six factors, three qualifying grades were established, with the exception of colour vision in which there were only two. Grade 1 may roughly be interpreted as perfect function; grade 2 as mild disability; and grade 3 as moderately severe disability. As each trade was investigated, the minimum grade of function compatible with efficient work was determined for each of the six factors.

In addition to the six primary factors, it was found that there were eight items of secondary importance which might have a bearing on the employment of an individual in a trade: (1) height under 63 inches; (2) weight over 200 pounds; (3) effort-limiting diseases; (4) speech defects; (5) orthopædic deformities; (6) chronic respiratory conditions; (7) chronic skin conditions; (8) mild emotional instability. Each trade was therefore further assessed to determine whether or not any of these factors would constitute a serious handicap. If so, they were recorded for that trade as "not permissible".

When the investigation was completed, a job analysis sheet was drawn up for each of the non-flying trades, and these sheets were incorporated as a section in the revised "Manual for Medical Officers", forming the basis of the new physical standards for non-flying personnel.

Trade: PIGEON LOFTMAN

MINIMUM PHYSICAL REQUIREMENTS

Vision	*Colour vision*	*Hearing*	*Hands*	*Arms*	*Legs*	*Other factors not permiss.*
3	1	3	2	1	1	3.5.6

Duties of the Tradesman

The breeding, training and care of pigeons used in the Service for the carrying of messages when radio equipment fails or is not available. This tradesman spends most of his time in the pigeon loft, which is unheated, so that his general health must be good.

He is often required to deliver pigeons to aircraft and marine craft at a moment's notice and hence must be capable of running moderate distances. *Colour discrimination is needed,* since the pigeons are identified by coloured leg bands as to special characteristics (*i.e.,* ability to fly over snow, etc.). Because the pigeons are free in the loft and not in cages, grade 1 arms are needed to catch them when required. Visual acuity and hearing may be grade 3 with no loss of efficiency.

Fig. 1.—Sample job analysis sheet showing the minimum physical requirements for the trade of Pigeon Loftman.

A sample job analysis sheet, slightly modified for purposes of simplicity is set forth in Fig. 1. It will be noted that the minimum physical requirements are set out at the top of the sheet according to the six primary and eight secondary factors. There then follows a description of the duties of the tradesman—in this case, a pigeon loftman. This information provides a basis for the interpretation of functional efficiency in terms of the duties which an applicant will be called upon to perform.

In the example demonstrated in Fig. 1, the numbers 3, 5, and 6, appear in the column entitled "Other factors not permissible". These numbers are the code numbers for effort-limiting diseases, orthopædic deformities, and chronic respiratory conditions respectively, none of which are permissible in this trade.

The discussion thus far has revolved largely around the methods by which the minimum physical standards were established. This, however, was the solution to only half the problem. It still remained to develop a simple method whereby the mass of technical medical information could be utilized intelligently and without delay by the non-medical staff concerned with placement of individuals in the proper service trades. This problem was solved by the production of an "Index Manual", the function of

which can best be understood if one follows the course of a partially disabled individual from the time he presents himself at an R.C.A.F. recruiting centre until he is finally placed in the trade for which he is best suited.

The applicant is first briefly interviewed by non-medical personnel with a view to determining his general suitability for enlistment in the R.C.A.F., from the standpoint of education, intelligence, ability to learn, etc. If found suitable, he is then referred to the medical officer, who determines his physical fitness. On the basis of the medical history and physical examination an estimate is made of the applicant's functional ability with particular reference to the six primary factors and the eight secondary factors previously described. These findings are recorded as a physical profile on his medical documents. Let us suppose for example that the candidate has grade 3 vision, grade 1 colour vision, grade 3 hearing, grade 2 hands, grade 1 arms, and grade 1 legs. In addition, let us suppose that he has a speech defect and a mild chronic dermatitis. His physical profile would then be 313211/4.7. (4 and 7 being the code numbers for speech defects and chronic skin conditions respectively).

313211

Aero Engine Mechanic	General Duties (Batman) 6.7.
Airframe Mechanic	General Duties (Steward) 6.7.
Armourer	Hospital Assistant 6.7.
Armourer (Bombs)	Inspector (A.I.D.)
Armourer (Guns)	Instrument Mechanic
Baker 1.6.7.	Interpreter 4.
Bandsman (T.D.) 1.3.5.6.	Laboratory Assistant 6.7.
Barber 6.7.	Laundryman 6.7.
Butcher 6.7.	Machinist
Canteen Steward 6.7.8.	Metal Worker
Carpenter	Operator Mechanical Audit
Carpenter (W.B.)	Painter (W.B.) 6.
Chef 6.7.	Pharmacist 6.7.
Chef (Hosp.) 6.7.	Pigeon Loftman 3.5.6.
Clerk (Acc.)	Pumpman (W.B.)
Clerk (Acc.) (W.B.)	Radiographer 6.7.
Clerk (Gen.)	Seaman
Clerk (Gen.) (Med.)	Shoemaker
Clerk (Postal)	Specialist Miscellaneous
Dispenser 6.7.	Tailor
Electrician	Telephone Man (Cable) 3.5.6.
Electrician (W.B.)	Telephone Man (Combination) 3.5.6.
Engineer Stationary	Telephone Man (Construction) 3.5.6.
Entertainer	Telephone Man (Switchboard)
Fabric Worker 6.7.	Telephone Man (Teletype)
Fireman 3.	Teleprinter Operator
Fitter General (W.B.) 3.	
General Duties	

Fig. 2.—Sample sheet selected from the "Index Manual", showing all the trades for which an applicant with a physical profile of 313211 is fit.

With this physical profile available, the applicant returns to the interviewing officer who notes the profile, and consults the "Index Manual" prepared for his use. This manual contains a separate page for each possible physical profile, arranged in numerical order so that the interviewing officer may readily locate the required information. On each page are listed all the service trades for which an individual having that particular profile is physically fit. In this instance, the interviewing officer turns to the page numbered 313211, which is shown as Fig. 2.

It will be noted in Fig. 2 that many of the trades listed are followed by code numbers, representing the secondary factors which are not permissible for that particular trade. If any of the numbers found after a given trade are also present in the second part of the applicant's physical profile, he is not medically fit for that trade. Thus in the case of the applicant whose course we are following (physical profile 313211/4.7.) he will be fit for all trades listed in Fig. 2 with the exception of the following:

Baker 1.6.7.	General Duties (Batman) 6.7.
Barber 6.7.	General Duties (Steward) 6.7.
Butcher 6.7.	Hospital Assistant 6.7.
Canteen Steward 6.7.8.	Interpreter 4.
Chef 6.7.	Laboratory Assistant 6.7.
Chef (Hosp.) 6.7.	Laundryman 6.7.
Dispenser 6.7.	Pharmacist 6.7.
Fabric Worker 6.7.	Radiographer 6.7.

The interviewing officer, knowing the trades for which the applicant is physically fit, can then determine the trade for which he is best suited from the standpoint of non-medical qualifications and personal preference. In this manner, misemployment of handicapped individuals is avoided, and men are supplied to the various trades fully qualified in all respects (medical and otherwise) to perform their specialized duties.

SUMMARY

1. The R.C.A.F. Medical Service has been faced with the problem of the efficient utilization of physically sub-standard individuals previously considerd unfit for service.

2. The principles of job-analysis have been applied to the medical requirements of the R.C.A.F.

3. A practical system has been devised whereby technical medical information can be utilized intelligently by the non-medical executive branch in the placement of physically handicapped individuals in the service.

Case Reports

SULFAPYRIDINE SENSITIVITY CHECKED BY ASCORBIC ACID

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The following case may be of interest in view of the increasing reports relating to the sensitivity to sulfa drugs.

J.P.S., male, aged 5 years, of German origin.

Complaints. — Cough, fever, vomiting, diarrhœa, prostration.

Personal history.—Normal birth without complications. Measles. Occasional colds and tonsillitis. Bronchopneumonia in 1940, at which time he was treated with dagenan. Excellent recovery.

Present illness.—On October 3, 1943, he became ill in the middle of the night with vomiting, three loose bowel movements at half hour intervals, temperature 103°. Nothing was undertaken at that time except the application of cold compresses to forehead. The boy fell asleep, and was apparently absolutely normal in every respect in the morning. The following day he played as usual around the house without any apparent discomfort. That same evening he developed almost identical symptoms as in the preceding night. Temperature 104°, slight hacking cough, some dyspnœa with increased respirations. He showed marked prostration. The boy was hospitalized.

Physical examination revealed typical upper lobar pneumonia, which findings were corroborated by x-ray. Sulfapyridine was started upon admission to the hospital, grains 12 to start with and grains 7½ every 6 hours. The temperature rose to 105°. Eight hours after the first dose of sulfapyridine, he developed a herpes labialis on the lower lip, with soreness of the mouth and eyes. The gums became red and swollen, and bled easily, showing scattered vesicles on the mucous membrane of the upper lip. The tongue became furred and furrowed and slightly swollen. Temperature, 106°. It was felt at this time that these symptoms closely resembled an allergy to the sulfa drugs, as reported in current literature. Owing to the fact, however, that these symptoms very closely resembled C-avitaminosis, the drug was not discontinued, but 50 mgm. of ascorbic acid were given with each subsequent dose of sulfapyridine. The results were astounding. Ten hours after the first administration of ascorbic acid the temperature had dropped to 103°, and kept steadily falling to normal. The temperature was 98.6, 18 hours after administering the first dose of ascorbic acid. The soreness of the mouth and gums had completely disappeared, the tongue appeared normal; the herpes remained, but subsequently disappeared with the local application of sulfathiazole ointment 30%.

Other laboratory findings were: Hgb. 93%; red blood cells, 5.2 million; white blood cells, 13,800; 24 hours later the white blood count was 12,900. Urinalysis was negative.

It may be claimed that this child suffered from vitamin-C deficiency previous to contracting a pulmonary condition. This may be possible, although the boy had a well-balanced diet at all times, including fruits in season. There is still, however, the possibility that sulfapyridine may, in some way, cause an acute depletion of the vitamin-C storage in the adrenal cortex and tissues of the body.

There is also the possibility that vitamin C directly improves the tolerance to these drugs. Chamelin and Funk[3] have shown that injection of whole liver reduces the toxicity of sulfanilamide in rats, and liver has a high ascorbic acid content. Pelner[4] also draws attention to the fact that the toxic effects of other substances also can be reduced by ascorbic acid: he instances neoarsphenamine, salicylates, and diethylbœstrol.

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PENICILLIN IN THE TREATMENT OF HÆMOLYTIC STAPHYLOCOCCAL SEPTICÆMIA*

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The following is a report on the use of penicillin in the treatment of two cases of staphylococcal septicæmia that were resistant to treatment with sulfonamides. It is a well known clinical fact that certain patients with hæmolytic staphylococcus aureus septicæmia and osteomyelitis are resistant to large doses of sulfonamides. The two cases in this report are patients who had received adequate amounts of sulfathiazole and sulfadiazine, whose blood cultures remained positive for hæmolytic staphylococcus aureus, and who did not improve clinically.

CASE 1

R.V., aged 9 years, was admitted on July 20, 1942; temperature on admission 107°; with a complaint of fever, general malaise, headache, and pain in the left groin. The family history was negative and his previous history was irrelevant.

Present illness.—Until July 18, 1942, the patient had enjoyed the best of health. However, he was "bothered by one tooth which caused some discomfort when he bit on it". Prior to going on their summer vacation the parents decided that the boy should have the offending tooth removed. This was done on July 17. The following morning when the patient awoke he complained of being tired. That evening his temperature reached 99° and he was drinking great quantities of fluids. On the morning of July 19 his temperature reached 101°, and he did not want to get up. His physician was called that morning. The physical findings were negative. Later on in the morning the patient complained of an ache in the region of the vertex of the skull when he moved his head. He also complained of pains in the groin when he moved. The headaches and pains in the groin persisted until the day of admission to the Hospital for Sick Children (July 20, 1942). All day, on July 19, the patient took no solid food, but drank a great deal of water and fruit juice. In the afternoon his temperature rose to 104°. His physician was called again that evening and prescribed sulfathiazole. The patient was delirious during the night. The following morning the temperature was 105° and the child's physician advised admission to hospital.

Physical findings and course of illness.—After the patient had been admitted to hospital he was irrational and appeared dangerously ill, with a temperature of 107°. All during the night he had this fever and the outlook seemed doubtful. His blood cultures showed the growth of hæmolytic *Staphylococcus aureus.* He had been started on sodium sulfathiazole intravenously. He then received sulfadiazine and later sulfathiazole. He had a swollen tender area over the left ramus of the pubes. This subsided in one week to 10 days. He developed a pleural friction rub during the first 10 days and a small amount of pleural effusion was seen on x-ray. This fluid disappeared later in the course of his illness.

For the first 16 days of his illness the patient was never completely conscious, and, although there was slight improvement at the time his temperature fell to 102° for a day or so, he gradually became worse and his blood cultures again started to show positive growths at the end of 24 hours rather than at 72 hours. On the 15th and 16th days of his illness in hospital, all who examined him felt that he was going to die. At this time penicillin was started and kept up. His temperature fell from 105 to 98° after the first two doses of 5,000 Florey units. From then on he made remarkable progress until the 24th and 25th days of his illness, at which time his temperature went up to 101° and 102° F. His blood cultures were sterile on these two days for four days, but a scanty growth was obtained on the 5th day. After that the boy made an uninterrupted recovery. For a time he had a toxic cerebritis or encephalitis, the cause of which was not ascertained. During his very weakened state he would repeat words spoken to him. At present he is in excellent physical condition.

CASE 2

S.B., aged 6 weeks, admitted January 8, 1943, temperature on admission 101 to 102°, with a report of vomiting, and fever for 2 weeks. Family and past history were irrelevant.

Present illness.—The baby was admitted to hospital with a diagnosis of pneumonia and intestinal intoxication. The patient had not gained well since birth, and had always been a "feeding problem".

Physical findings and course of illness.—Physical examination revealed a small, acutely ill infant, with sunken eyes and vomiting thin greenish-stained material. Chest revealed fine crepitations at both lung bases and the abdomen was distended. A diagnosis by the patient's physician was made of intestinal intoxication and bronchopneumonia. During the course in hospital the infant vomited, was drowsy and became markedly dehydrated, necessitating repeated injections of parenteral fluids. The baby also had repeated bouts of fever, and finally the temperature curve became septic. After three weeks in hospital it was felt that the patient was suffering from a septicæmia. From the day of admission the baby had received sulfadiazine and sulfathiazole on different occasions. During the course in hospital abscesses developed which were surgically drained. During the administration of sulfathiazole the blood cultures grew hæmolytic *Staphylococcus aureus.* At this time the blood level of sulfathiazole was 3.8 mgm. %. Penicillin was then begun, and the septic type of fever gradually subsided coincident with sterilization of the blood. The abscesses which had been discharging purulent material containing hæmolytic *Staphylococcus aureus* gradually ceased discharging and sterile cultures were obtained. After eleven days of penicillin therapy the baby made an uninterrupted recovery.

DISCUSSION

In the first case the patient was septic in appearance, mostly irrational, and developed a swollen tender area over the left anterior part of the iliac bone and over the left pubic bone and a pleurisy with effusion. He gradually became emaciated, his blood cultures repeatedly grew hæmolytic *Staphylococcus aureus,* although his drug blood levels were high. The night before penicillin was to be administered he was comatose, irrational, and, to all who observed him, obviously dying. Penicillin was administered every 4 hours by continuous intravenous

* From the Wards and Laboratories of the Hospital for Sick Children, Toronto, and the Department of Pædiatrics, University of Toronto, under the direction of Alan Brown, M.D., F.R.C.P.(Lond.).

infusion and his temperature for the first time in his 16 hospital days became normal. He definitely improved and commenced taking food and fluid by mouth two to three days following the use of penicillin. During the 24th and 25th hospital days of his illness, his temperature rose again to between 100 and 102° F. and his daily blood cultures grew a few colonies of hæmolytic *Staphylococcus aureus* after 5 days' incubation. Afterwards he made an uninterrupted recovery.

The second patient was an emaciated, dehydrated, critically ill infant. The baby had a very bad prognosis from the first day of admission to hospital. The course of the disease was not as acute as in the case of the first patient but the baby was progressively becoming worse. The condition did not improve during the administration of sulfonamides. After penicillin was commenced a definite improvement occurred coincident with sterilization of the blood and of the discharging abscesses.

SUMMARY

1. Two cases of children suffering from hæmolytic *Staphylococcus aureus* septicæmia are reported.

2. The patients were given adequate doses of the sulfonamides without improvement.

3. Penicillin was administered and there was prompt recovery of both patients with sterilization of the blood.

4. No reaction of any kind was noted as a result of penicillin administration.

The author is greatly indebted to Dr. Chester Keefer, of Boston, Mass., for sending supplies of penicillin and for his valuable instructions in treating these cases. In addition, acknowledgment is made to Dr. W. E. Bunney and Dr. George Harrop of the Squibb Institute for Medical Research at New Brunswick, N.J., for their generous supplies of penicillin. The author also wishes to thank Dr. T. B. Verner for allowing him to report Case 1, and Dr. Miriam Brick, for allowing publication of Case 2. To Miss Isobel Scott the author's thanks are due for untiring technical assistance at all times, in the filtering of the penicillin.

CHRONIC PROGRESSIVE POSTOPERATIVE GANGRENE OF THE SKIN AND SUBCUTANEOUS TISSUES

(Report of a Case)

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This definite clinical entity is also known as Meleny's ulcer, since it was Dr. Frank L. Meleny, of New York, who did most of the investigation on it. Less than fifty cases have been reported in the literature, most of which appear in the American journals.

The etiology of this condition was proved by Meleny in a series of experiments on guinea pigs. He showed it to be due to a symbiotic infection with a micro-aerophilic non-hæmolytic streptococcus and some other organism, usually *Staph. aureus hæmolyticus.* The streptococcus was considered to be the essential organism and found to be present in all five cases he reported. The intestinal origin of this organism has never been proved, but there is good presumptive evidence for such an origin. The streptococcus is rare and easily overlooked in routine cultures. The theory is that the infection with the streptococcus paves the way for the second organism to produce the actual gangrene.

The cultural characteristics have been investigated and reported by Meleny and Brewer.[8] It is a very small organism growing in tangled chains of varying length, and is Gram-positive in reaction. It grows readily on an anaerobic culture of 5% sheep's blood agar, appearing, after 24 hours, as small, pin-point, non-hæmolytic colonies which become slightly green on standing. An anaerobic culture ferments dextrose, lactose, saccharose and salicin, but not mannite.

Microscopically the lesion presents a characteristic picture of extensive fragmentation of the dense subcuticular connective tissue, and marked cellular infiltration of the subcutaneous fat. These cells are filled with streptococci almost to the bursting point, growth of the bacteria apparently taking place within the cells. In the erythematous zone of extension the bacteria, in short chains, are very numerous, appearing as large tangled masses, the size of white blood cells, or larger. The blood vessels are dilated, with large numbers of polymorphonuclears clinging to the walls, but show no evidence of thrombosis. This last feature supports the belief that the process is due to a lytic action of the bacteria, and is not due to ischæmia as in the case of a carbuncle, in which the vessels are thrombosed. The lesion involves only the skin and subcutaneous tissue and does not extend beneath the deep fascia.

Clinically, this condition follows a rather definite developmental pattern. All cases thus far reported have followed an abdominal operation (usually for a perforated viscus), or drainage of an empyema. In some of the cases of

empyema there had been a recent abdominal operation, and it is suggested that the empyema resulted from a septic infarct.

The lesion first appears in the second week after operation, or removal of a drain, as a painful area around a suture puncture or on the edge of the wound adjacent to the drain. It appears as a deep red or purple raised area of superficial œdema, which slowly breaks down into a necrotic mass resembling an untreated carbuncle, surrounded by a zone of erythema which gradually fades into normal skin. An ulcer forms in the centre of the gangrenous skin and gradually enlarges, the central margin melts, the periphery becomes more sharply outlined and irregular. The gangrenous margin takes on the appearance of grey, brown, or even black suede leather; it is crenated. By the end of the second or third week the skin slough separates, leaving a base of red granulation tissue which shows a tendency to heal. Later, islands of epithelium appear, probably originating from the epithelium of the hair follicles. At this stage there are four definite zones; a centre of apparently healthy, red granulation tissue, and epithelial islands surrounded by a slough which becomes dirty green in colour, which in turn is surrounded by a raised purple or black gangrenous area, and, lastly, an advancing peripheral zone of œdema and erythema which is exquisitely tender and painful.

These patients present a picture typical of a chronic debilitating disease. Their morale is very low due to severe pain causing loss of sleep and anorexia. Almost all cases exhibit definite personality changes; people previously jovial become moody and morose. The temperature is usually only slightly elevated, in spite of a very extensive lesion.

The diagnosis is made upon the history and clinical features, and by bacteriological examinations, which consist of making aerobic and anaerobic cultures of the slough and of the erythematous zone by excising small blocks of tissue and placing them in suitable media. The conditions from which it has to be differentiated are, erysipelas, gas gangrene, hæmolytic streptococcic gangrene of the skin, blastomycotic infections and chronic burrowing ulcers of the abdominal wall due to another micro-aerophilic streptococcus.

TREATMENT

Treatment has been varied. A few of the local applications tried without success are: glycerine, potassium permanganate, hydrogen peroxide, dilute acetic acid, merthiolate, gentian violet, quartz light, ultra-violet irradiation and innumerable others. General treatment has likewise been varied, high vitamin diets, vaccines, anti-sera, injection of heavy metals and others have been tried without avail.

The only successful treatment to date has been that developed by Meleny, which consists, first, of adequate excision of the entire lesion. To excise the carbuncular area without excising wide of the erythematous zone is useless, because it is in this zone that the offending streptococci are present. The manner of excision, with scalpel or electro-cautery, does not seem to make much difference, providing the excision is adequate. The raw area is immediately covered with a paste of zinc peroxide powder and water, equal parts, which makes a smooth paste about the consistency of a 40% cream. Selection of a suitable preparation of zinc peroxide is important. It should be tested by adding 5 grm. of the powder to 50 c.c. of water, allowing this to stand at room temperature for one hour, when a flocculent curd should settle out and show bubbles of oxygen rising from it through a clear supernatant fluid. Before using, 10 to 15 grm. portions of the powder are heated to 140° C. for 4 hours in a dry oven, to sterilize it and mobilize the oxygen. Higher temperatures will decompose it.

The paste is applied directly to the wound and covered with two layers of gauze impregnated with paste. This dressing is then sealed from the air by vaseline gauze, oiled silk or rubber dam. Dressings are changed daily, crusts of paste are washed off with saline and fresh paste dressings are applied. This is continued for 10 to 14 days when the area should present a clean, healthy, granulation tissue base.

If the area is extensive skin grafting is indicated. The Reverdin, or pinch-graft, has been found most satisfactory. The grafts are covered with paraffin mesh gauze, over which the paste dressings are applied. The dressing is changed daily down to the paraffin mesh for about 10 days, when the grafts will have become adherent. The wound is now dressed with zinc oxide ointment. No attempt should be made to pull the edges of the wound together with adhesive or sutures, because a recurrence may develop.

CASE REPORT

S.F., a 35-year old white male was admitted on September 18, 1941, with the usual complaints and findings of a perforated peptic ulcer, present 8 hours. Operation was performed under general anæsthesia, the perforation in the prepyloric area was closed by a linen purse-string suture, a small cigarette drain was placed near the site of perforation, and the abdomen closed in layers, the skin by dermal tension sutures and skin clips.

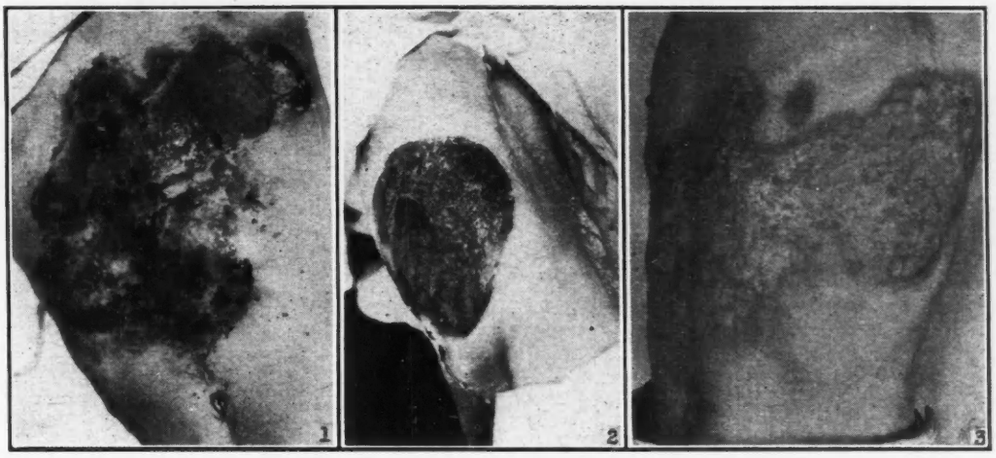

Fig. 1.—The extent of the lesion on January 1, 1942. Note the black raised margin with the advancing zone of erythema in left axilla. The dark areas in the centre of the lesion are patches of gentian violet. **Fig. 2.**—The extent of the excision necessary to remove the advancing zone of the lesion. **Fig. 3.**—Healing complete after skin grafting as on April 1, 1942.

On September 22 an area of atelectasis developed in the lower lobe of the right lung. The abdomen was markedly distended at this time. This condition cleared rapidly and satisfactorily.

On September 26 a painful area developed in the upper end of the incision; examination revealed an area of hyperæmia around the upper suture. The suture was removed and hot compresses applied to the incision, which soon began to drain serous material from the upper end.

By October 6 a necrotic area had developed in the upper end of the incision. It continued to spread over the abdomen and lower chest in spite of treatment tried in the following order: Sulfathiazole powder and heat lamp, painting with zinc merthiolate; potassium permanganate compresses; dry zinc peroxide powder; x-radiation; enzymol; excision of necrotic edges with the electro-cautery; painting with gentian violet and dry heat; excision and cauterization of the edges with phenol.

In spite of treatment the lesion continued to spread and by January 1, 1942, it had extended to the infra-axillary region. At this time the patient was transferred to our service.

On January 12, wide excision was carried out under sodium pentothal anæsthesia; zinc peroxide paste dressings were applied and changed daily. By January 26 the area presented a clean, red surface which was covered with grafts taken from both thighs. Zinc peroxide dressings were applied and continued for 10 days, then changed to zinc oxide ointment. In addition, the patient was given high vitamin ulcer diet supplemented by oral vitamin B-complex tablets, and small repeated transfusions.

On March 1 the patient was discharged from hospital to have further dressings in the outpatient clinic. By April 1 epithelialization was complete.

Pathological report on excised tissue.—The epithelium is hyperplastic and in the sub-epithelial tissues an inflammation is noted which is predominately of low-grade chronic character. There is hyperæmia with hæmorrhage in the tissue between the epithelial pegs. In the deeper portions of the dermis and subcutaneous tissues there is an extensive inflammatory reaction which is of acute suppurative character and there is accompanying destruction of collagenous tissue. Numerous clumps of bacteria are present which are of coccal shape. There is nothing to suggest a definite etiological agent.

Cultures of the tissue yielded a growth of hæmolytic *Staph. aureus*, and small, Gram-positive, non-hæmolytic streptococcus.

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The interesting hypothesis that *cancrum oris*, an acute and lethal condition of the mucous membrane of the mouth which is most commonly found among slum children, but also in debilitated elderly people, is probably a disease associated with scurvy is examined by Drs. J. Bouillat and S. Ramiandrasca in the *Revue de la Science Médicale Française du Moyen-Orient*. By treating 48 sufferers with large doses of vitamin C, an average dose being 500 milligrams of ascorbic acid a day, they reduced the expected mortality of three sufferers in four to one in four; and they suggest that a deficiency of vitamin C is at least a concomitant of *cancrum oris*. In some cases this may be due to a lack of vitamin from the diet or to faulty absorption via the digestive system; but they also point out that there may be excessive consumption of the vitamin by the organism of such diseases as measles and whooping cough. Affected children are always in a bad state of health and frequently convalescent from one of these ailments or some other of the exanthemata.—*J. Roy. Inst. Hyg. & Pub. Health*, 1943, **6**: 252.

Clinical and Laboratory Notes

PHARMACOPŒIAL STANDARDS

Report No. 2*

At the third meeting of the Canadian Committee on Pharmacopœial Standards, held in Ottawa on October 1 and 2, the final draft of the monographs which will constitute the Canadian Supplement to the British Pharmacopœia, was approved unanimously, and general satisfaction was expressed at the manner in which these monographs had been compiled.

The following changes were made in the list of items previously approved and published:

Deletion	*Additions*
Secononum Solubile	Acidum Phosphoricum Dilutum
	Alcoholia Lanæ
	Leptazolum
	Liquor Arsenicalis

The Liquor Arsenicalis proposed is that of the Canadian Formulary with chloroform water as a vehicle. The only other change was the alteration of the name "Diethylstilbœstrol" to "Stilbœstrol", thus following the example of the sixth Addendum to the British Pharmacopœia.

The proposed order governing the variability in the active ingredients of tablets, capsules and ampoules was reviewed and finally recommended to the Department for adoption. The only material alteration made was the removal of a ceiling in the case of vitamin tablets. In addition, the committee advised the department to introduce a regulation dealing with hypodermic tablets.

The draft of a proposed regulation regarding common names was examined. What should be the common name of a drug was discussed at some length. It was felt that the existence of numerous proprietary names for the same substance was confusing both to the medical profession and to the general public and that the adoption of one common name which would appear on the label in legible type with distinct visibility and as conspicuously as any other word or name would tend to minimize the risk of any mistakes. Members foresaw difficulties with trade mark names and the suggestion was mooted that it would be an excellent thing if manufacturers could be persuaded to waive the rights of trade marked names on expiry of the patent rights in consideration of the Department of Pensions and National Health making their trade name the official name so long as such name did not possess any undesirable features.

A report on liver extract led to an interesting discussion of the best means of exhibiting this product for the treatment of Addisonian pernicious anæmia. In the end it was decided that the size of packages should be limited to not more than three. The potency of liver extract should not be less than what was claimed on the label. Excess was of little consequence because over-strength did not really matter from the clinical point of view. As regards the unitage it was felt desirable to fix a permissive unit which could work consistently with the American unit, and thus permit of the American unit being accepted. This decision took consideration of the fact that there were more brands of liver extract coming in from the United States than were being manufactured in Canada.

The question was raised as to whether penicillin should be sold under license, and it was pointed out that there would be practically no penicillin available to the general public for some time to come. But it was felt on the whole that arrangements should be made for licensing this product so that the department could be in a position to control the sale when necessity should arise.

Professor Richard Lessard, of Quebec City, who had been appointed by the Honourable Ian A. Mackenzie as a member to succeed the late Dr. J. A. Mousseau, was introduced by the Chairman, Mr. H. M. Lancaster, and cordially welcomed by the Committee.

A. LINTON DAVIDSON,
Secretary.

35 John St.,
Ottawa.

* The first Report appeared in the October, 1943, issue.

Special Article

PROGRESS REPORT OF THE R.C.N. MEDICAL RESEARCH UNIT*

The design of the R.C.N. Visual Acuity Test Apparatus has been approved and 24 of the machines have been built by Kenneth Roseblade, S.B.A., R.C.N.V.R., in the Department of Physiology at the University of Toronto. The apparatus provides for standardized and glare-free illumination of a variety of charts. The charts are well protected and a cover enables the operator to keep them hidden from subjects not under test. The charts are now in use in the various naval barracks.

As a supplement to the R.C.N. Colour Vision Lantern Test, two types of anomaloscopes have been designed and tested. The dichroic anomaloscope has been found particularly useful in sorting personnel showing different degrees of anomalous trichromatism. The criteria of differentiation may be much more precisely defined than is possible with either the Ishihara or lantern test or a combination of both. This precision is probably unnecessary for naval work

* Department of Physiology and the Banting and Best Department of Medical Research, University of Toronto.

but may prove useful under special conditions. The R.C.A.F. has already indicated an interest in this device.

The R.C.N. Hecht-Schlaer Adaptometer has been approved as the night vision test apparatus for use in the Navy and several of these machines are at present in operation and a number more are on order. With this device one operator can obtain a precise measure of the low-illumination sensitivity of the eyes of approximately 10 men per hour. This device has been designed by Professor Selig Hecht and Dr. S. Schlaer, of Columbia University, in collaboration with personnel of the R.C.N. Medical Research Unit. At present night vision test facilities are provided in Halifax and Surgeon-Lieutenant C. G. Smith and Sub-Lieutenant J. W. Dales have supervised determinations on approximately 6,000 ratings and officers. About 3% of those tested have been found to have a serious defect in their night vision. Such personnel would constitute a serious hazard if placed on night lookout duty.

The organization set up to test night vision is also equipped to carry out auditory acuity and frequency discrimination tests on ASDIC personnel. Nearly 1,000 tests of this nature have been carried out to date. Facilities for the tests are now available in Esquimalt and Halifax. Surgeon-Lieutenant J. W. Scott is at present employed in setting up the facilities for carrying out the test in "AVALON".

Dr. R. C. Partridge has continued her work in the investigation of fatigue in ASDIC personnel. Surgeon-Lieutenant H. D. Hebb has collaborated with Dr. Partridge in an investigation of the effect of training on frequency discrimination, and this work is being continued at the present time. The Royal Navy has shown great interest in this work.

Personnel of the Medical Research Unit have assisted in setting up standards for the lighting, ventilation, and sanitary facilities of Naval premises. A survey of lighting and ventilation at H.M.C.S. "YORK" and H.M.C.S. "CORNWALLIS" has been completed. A survey of the lighting and ventilation in every type of ship operated by the Royal Canadian Navy is at present under way. Special attention is being given to conditions in motor launches ("Fairmiles").

Studies on the phenomenon of "immersion-foot" in experimental animals have been continued by Mr. M. L. Bunker. A vaseline-impregnated foot covering has proved effective in preventing this condition. Special socks, to be provided on life-boats and on life-rafts, are being designed to test the efficacy of a similar procedure in preventing immersion-foot in humans. The effect of diet on the incidence of immersion-foot and on the resistance to exposure of experimental animals is also being investigated.

Spectrograms of tracer bullet material and of a variety of glass filters have been obtained, with a view to determining the filter best suited to permit visualization of tracer bullets when fired into the sun. It is obviously desirable to obtain a filter which will let through a part of the visual spectrum in which the flame of burning tracer substance is rich and sunlight relatively poor. Several such filters are available and initial field trials have been completed with encouraging results.

Surgeon-Lieutenant E. A. Sellers has worked for some two months at the Rockefeller Hospital with Lieutenant Neumann, of the U.S.N., on problems of the peripheral circulation. They have utilized new methods for detecting changes in volume of small blood vessels and have made a number of interesting observations. They found, for example, that when the blood vessels of the toes dilate as a result of a spinal anæsthetic there is a simultaneous, probably compensatory, constriction in the blood vessels of the fingers. It is hoped that a continuation of this work will provide some assistance in the early detection of shock.

During the past academic year the work on naval aspects of nutrition has been continued and extended. Lieutenant-Commander James Campbell is the senior member of the Nutrition Section and he is assisted by Professor W. G. E. Eggleton and Miss E. J. Reed. The more recent work of this group has been the preparation of emergency rations for survivors. This project, which was conducted in collaboration with Surgeon-Lieutenant Commander J. E. de Belle and Lieutenant R. W. Millard, has progressed very favourably and the emergency rations are now available for life-boats and life-rafts. Some further problems connected with these rations require the attention of the group. A considerable amount of work on whole milk powders, on the preparation of menus for sea cadets, the testing of materials for removing oil, and the construction of a simple canvas rain-water sac, has been carried out.

Dr. J. B. Bateman and Miss J. M. Lang have continued their work on the preparation of fresh water from salt. They have studied the Stedmen Evaporator and a number of simple masks and condensers. Most of their work has been concentrated on the design of a hand-operated pump for freezing salt water and obtaining relatively fresh water from ice. A model of a pump — the seventh one actually tested — has now been made available and it is hoped that this one will justify a sea trial.

Lieutenant Campbell Cowan with the help of the R.C.A.F. research group, played an important part in the designing of a new life-saving jacket which, in addition to providing filtration and warmth, offers a considerable measure of protection against under-water blast. These new jackets are now being manufactured and it is hoped that by summer some 30,000 men will be equipped with this new and improved jacket. In collaboration with the

R.C.A.F. Committee a lamp has been designed which can be seen for a far greater distance than any other lamp using the same power. The new model has, in addition, two or three times as long a life. These lamps are built into the life-saving jacket and are completely waterproof. They will continue to function after long periods of immersion in water.

Lieutenant Cowan has been able to assist Surgeon-Lieutenant Commander C. M. Oake in the construction of his proposed R.C.N. battle belt. Cowan has also worked with Dr. Bateman on the fresh water problem.

Mr. J. H. W. Willard and Surgeon-Lieutenant Sellers continued their investigations on burn shock. They studied the rate of flow of lymph in burns and the toxicity of lymph from burned areas. They investigated the effect of plaster bandages on hæmoconcentration and on the mortality rate and on the signs and symptoms of burn shock.

Sub-Lieutenant N. R. Stephenson attacked a number of problems. He has attempted to isolate a toxic factor from the burned skin of animals. These efforts have thus far been unsuccessful. He has helped to improve the saline used with contact lenses. His main work during the last few months has been the design of a portable laboratory kit which has now been accepted for use in the Royal Canadian Navy. Supplied with this kit a Medical Officer will be able to do urine and stool analyses, hæmatology, blood-grouping and a considerable amount of bacteriological work. One hundred of these kits will be constructed in the R.C.N. Medical Research Unit and supplied to the Navy.

Surgeon-Lieutenant W. Locke is testing the effect of various therapeutic agents in the treatment of shock. The condition is produced by the application of a pressure cuff around the leg. This procedure leads to changes in the composition of the blood and in blood pressure, which are characteristic of traumatic shock. Surgeon-Lieutenant Locke is testing posterior pituitary extracts, adrenal cortical extracts, isinglass solutions, and various other materials. This work is being done in collaboration with Professor R. E. Haist, of the Department of Physiology.

Surgeon-Lieutenant J. M. Parker has been mainly responsible for the continuation of the work on swing sickness. The six swings at H.M.C.S. "YORK" have been used steadily and a great variety of therapeutic agents have been tested. It has been possible to secure a combination which is better than any of those which have previously been available. It is hoped that a sea-trial can be made in June or July. This work has been carried out in collaboration with Dr. Wilder Penfield, Dr. Robert Noble, and others at McGill University.

Dr. A. E. MacDonald and Warrant Officer C. R. Shorney have been busy with the contact lenses. A group of Army Officers is now being equipped. The trials of the lenses in the R.C.N. have, in general, been satisfactory, but further work is necessary before final recommendations are made.

Personnel from the Research Unit are engaged in setting up an electroencephalographic apparatus (loaned by the University of Toronto) for use by the staff of the Naval Hospital in Halifax.

The members of the Research Unit are being utilized to an increasing extent as advisers to various branches of the Service.

SURGEON COMMANDER C. H. BEST, M.D., D.Sc., F.R.S.
SURGEON LIEUTENANT COMMANDER D. Y. SOLANDT, M.D., PH.D.

Editorial

UNITED NATIONS CONFERENCE ON FOOD

FOR the past twenty years there has been a rising tide of education on the subject of nutrition. It has reached such heights as to raise hope that the average individual is beginning to absorb the main principles. And yet that is only one side of the matter, and possibly not the most important one. It is well to teach the principles of good nutrition, but it is necessary first to have the food. It has for too long been taken for granted that food is available to all. That the production of food can be made adequate has never been questioned. That there has been a failure to distribute food reasonably and to all, is equally beyond question. The paradox of starvation of the consumer and ruin of the producer in a world of plenty is one at which we well may gaze with dismay.

There is therefore more than ordinary significance in the recent United Nations Conference on Food and Agriculture, at Hot Springs, Va. The Conference was unique in two respects: it was the first United Nations Conference to deal with postwar problems; it was a technical conference carried on by plain people rather than diplomatically hampered statesmen, on the everyday needs of man rather than nations.

The Governments of 44 countries, nine of them occupied by enemy forces, took part in the Conference. The delegates could not bind their governments, as they had no power to do so, but they made unanimous recommendations which should be highly effective in each country.

The Conference could hardly have come into being if it had not been for the work of the League of Nations faithfully and carefully carried on in the last fifteen years. It was only through its work that an accurate and comprehensive picture of the state of nutrition throughout the world was available.

The Conference opened with a report from the League which concluded with the statement: "Taking the world as a whole, the picture is one of world-wide underconsumption, leading to malnutrition and its attendant evils. It will be one of the tasks of the proposed United Nations food and agricultural organization to complete the picture in dismal detail and to replace it by a brighter one."

The Conference affirmed its belief in man's ability to expand food production and to make it possible for human beings everywhere to obtain adequate diets. It was at the same time fully realized that this goal could never be reached whilst there was the fear of war and its uneconomic use of food and other resources; it was just as clearly recognized that no efforts to improve the economics of food could succeed unless they formed part of a concerted program to expand the whole world economy. This was recognized in all its difficulty: "The first steps toward freedom from want of food must not await the final solution of all other problems. Each advance in one field will strengthen and quicken advance in all others. Work already begun must be continued. Once the war has been won decisive steps can be taken. We must make ready now."

The immediate result of the Conference has been the setting up of an Interim Commission which will draw up plans for a permanent international organization in food and agriculture; and to formulate for the consideration of the governments a formal declaration embodying the obligations which the Conference believed they must assume if food resources were to be increased and diets improved throughout the world.

From the medical point of view the work of this Conference holds out the hope of a practical approach to a problem which has a medical aspect as well as being universal in nature. Its solution, even if very far off, holds the key to the prevention of disease on a scale unapproachable by any separate medical planning. Indeed, no plans for the betterment of human health can be more than imperfect makeshifts so long as nutrition is poor.

Editorial Comments

Appeal for Quinine

More than a year ago the Controller of Chemicals, Ottawa, issued an Order prohibiting the sale of quinine in Canada for other than anti-malarial treatment. This was promulgated to all pharmaceutical houses and druggists, as well as being given prominence in this *Journal*. The object of this order of course was to conserve the supply of quinine in the country since the main source of supply had been cut off by the Japanese occupation of Java. How effective this was in checking non-essential use of quinine we cannot say, although so far as the medical profession is concerned it has been made clear that, except in the treatment of malaria, of which there is a minimal amount in Canada, quinine can with no serious results be entirely withdrawn from the pharmacopœia. Evidently, however, there are supplies of quinine in the country which even if not being dispensed unnecessarily should be collected for the one great object of treating malaria in our armed forces. It is possible that the profession as a whole in Canada does not yet appreciate the menace of malaria in this war. For obvious reasons there are no figures published on the wastage it causes, but frequent indirect references leave no doubt as to its tremendous significance. An appeal has been made by the Director General of Medical Services for the contribution of all supplies of quinine to the armed services. A Canadian Quinine Pool has been formed by the Controller of Chemicals and he will welcome all surplus quinine alkaloids and derivatives that can be sent him.

We most earnestly support this appeal for stocks of quinine. The drug or its derivations may be sent to the Controller of Chemicals, 1235 McGill College Avenue, Montreal.

"Morphia"

In the year 1900 an international agreement on the nomenclature of alkaloids and glucosides came into effect. It was agreed to by the General Medical Council of Great Britain and again asserted by the Pharmacopœia Commission of that Council at its annual meeting in December, 1942. By this agreement all names of alkaloids end in 'ine' (English) or 'ina' (Latin). The British Pharmacopœia adopted the new rule and has adhered to it in every edition for the past forty years. Previous to the adoption of this rule of nomenclature alkaloidal names in the B.P. ended in -ia in the nominative case or 'ae' genetive.

By some strange quirk of human behaviour British teachers and authors adopted the authorized form in all instances but three, Strychnine, Codeine and Morphine. They appear almost regularly in many publications as Strychnia, Codeia and Morphia and, in high class medical journals published in Britain it is not unusual to see written "Morphia and Atropine".

In Canada men who have caught the bad habit while studying in Great Britain pass it on to their students. The student is taught the correct nomenclature in his classes in Pharmacology, but hears the ancient name in his clinic from the teachers who were not born when the authorized spelling was made official and so cannot plead that they find it hard to adopt something new. One clinical professor thought he had settled the matter by saying "I prefer the British and American usage". The nomenclature of alkaloids is British and the British Pharmacopœia does not use the archaic spelling. To any teacher or practitioner who has graduated less than forty years ago there is no such word as "Morphia" or "Codeia" or "Strychnia". The ancients who persist in using these names should be consistent and say 'hyoscinia' and 'atropia' and 'scopolominia'.

A study of 100 people suffering from acne, a common and somewhat chronic skin disease affecting the forehead, nose, chin, chest, and back of the shoulders, has recently been made by Dr. J. V. Straumfjord, Astoria, Oregon, and his conclusion is that it is a result of vitamin A deficiency and would therefore be prevented by ensuring that the diet contains enough of this dietetic accessory. Treatment of these 100 persons, 90 being women and 34 of the total having suffered from the complaint for ten years or more, consisted in giving them a supplement of about 100,000 I.U. of vitamin A daily for six months or longer. Seventy-nine became free or nearly free from the eruption, and only three were wholly unimproved. Dr. Straumfjord states that no local treatment or medicine was given, and no alteration was made in the ordinary diet of these 100 persons.—*J. Roy Inst. Hyg. & Pub. Health*, 1943, **6**: 246.

Medical Economics

SOCIAL SECURITY IN AUSTRALIA

[*The situation in Australia with regard to proposed health legislation is so similar to our own that it may be of interest to summarize the present state of affairs as described in the "Medical Journal of Australia", July 17, 1943.*—EDITOR.]

In July, 1941, the Parliament of Australia set up a Joint Committee on Social Security whose terms of reference were, "To inquire into and, from time to time, report upon ways and means of improving social and living conditions in Australia and of rectifying any anomalies in existing legislation". Included amongst the specific proposals referred to the Committee was a "Comprehensive Health Scheme, including child welfare, maternal welfare, nutrition, and community medical service including hospitalization."

The report has been tabled to await discussion when Parliament reconvenes. The following extracts from it will show the similarities with our own problems, the solution of the questions raised evidently being equally uncertain.

The report divides medical care in Australia into two main headings:

1. "Positive Health", *i.e.*, preventive medicine, which includes public health and research and is financed very largely by Government. The Report adds, "Private medical men are not sufficiently associated with it at present".
2. Curative Medicine, which includes general medical work and hospital care, the latter being increasingly controlled by public hospitals under Government direction.

Certain deficiencies in public health provisions are pointed out; for example, restricted powers of the Commonwealth (federal) in respect of health: lack of uniformity in health legislation: lack of adequate training of medical students in public health: too few full time medical positions in health services, along with too much office routine and lay control and interference regarding specialized programs: lack of standardization of technique in infectious diseases hospitals: and so on.

Under medical care, the first point made is the inequality of medical service in various parts of the country. Hence the growing number of salaried medical men under government appointment, and hence also the necessity for the government to attempt to make good medical aid equally available for everyone. Linked with this it recognizes the obligation of the government to improve medical standards by (1) increasing facilities for research; (2) by making refresher courses possible for every practitioner; (3) lessening the strain on individual members of the profession.

The position as regards hospital and nursing is analyzed and the weaknesses and deficiencies pointed out.

POSSIBLE IMPROVEMENTS

The Report then comes to the possible methods of improving conditions. Apparently, a National Health and Pensions Insurance Act was introduced in 1938, but met with such opposition that it was never put into effect. The Report comments on this as follows:

"The Committee is impressed by the existing widespread opposition to the proclamation of this Act, and concludes from it that the scheme there suggested is unsuitable as a permanent basis for social benefits or health services for the people of Australia. In particular, the Committee has observed (*a*) the absence of medical benefits for the dependents of an insured person; (*b*) the absence of provisions for hospital service, or maternal and child welfare; (*c*) the limitation of benefits to a specified income group; (*d*) the association of medical benefits and cash benefits under one administration; (*e*) the absence of any provision for assistance during periods of unemployment (one of the chief causes of malnutrition and ill health); and (*f*) the disadvantages inherent in the method of payment for medical services proposed, *viz.*, capitation fee and panel system.

"In our opinion, this Act lacks provisions that are essential to any comprehensive health service adequate for the needs of the community as a whole, and fails to provide an acceptable basis upon which any such service may be satisfactorily planned. We, therefore, favour the repeal of this Act.

ALTERNATIVE PROPOSALS

"There are many divergent views within the medical profession in Australia as to the health service best suited to Australian conditions. Both the National Health and Medical Research Council, however, and the Federal Council of the British Medical Association in Australia agree that its essential principles must be (*a*) to provide a system of medical services directed towards the achievement of positive health and the prevention of disease and the relief of sickness; and (*b*) to render available to every individual all necessary medical services, both general and specialist and both domiciliary and institutional. . . ."

[*The Committee then describes its methods of inquiry, which were very much those followed by the Special Parliamentary Committee on Social Security in Ottawa. Opinions were sought from as wide a cross-section of the population as was possible, and these were crystallized as far as possible into general recommendations.*]

The Council prefaced its recommendations by a statement of certain general principles. The first and most important of these was that health is no simple matter but is determined by a complex of social conditions; the next that the obligations of the community in the maintenance of community health cannot be discharged if the community does not provide sufficient funds to enable the public health departments to do those things which in their opinion should be done; that it was of the utmost importance that a higher state of personal health should be established and maintained throughout the whole community, and that all the necessary powers and resources of both Commonwealth and State should be applied to ensure this result; that the rapid development of medical practice along lines of specialized work had produced a complex of unco-ordinated activities all concerned with the care of individual health but becoming more and more divorced from the principles of prevention of disease, because of a lack of any proper administrative organization for bringing together all aspects of medical care.

The Committee reported as follows on the views of the profession as gathered from evidence of witnesses and reports of meetings.

"The Committee, after considering the published reports of certain of these meetings, and the evidence given before it by witnesses, is of the opinion: (1) That a substantial majority of medical practitioners object to a general salaried medical service on lines laid down by the National Health and Medical Research Council or any other lines put forward up to date. (2) That, on the other hand, there is general agreement that a salaried medical service may be justified in remote areas. (3) That there is practical unanimity of opposition from all private medical witnesses to any proposal for control of any general health service by any government department; and support for control by an independent body or commission, including a majority of medical men, if such a general health service should be introduced. (4) That there are indications that a more favourable attitude towards a salaried medical service may exist among medical officers of the fighting services; but it is not possible accurately to assess the situation without consulting every member individually.

"There is general agreement among witnesses that hospital services should be greatly improved and placed under a uniform system of control, and also that uniform standards should be established and strictly maintained. There is general support of the proposal for the establishment of health clinics in suburbs to decentralize outpatient services and, generally, as an encouragement to the development of group medical practice."

The Committee realized that the profession's attitude towards a national health service had been definitely influenced by the prolonged but inconclusive negotiations to arrive at a basis of payment for medical services under the 1938 Act. In spite of this however it was felt that good relations existed between the Committee and the various medical councils and medical practitioners generally.

THE SOLUTION

Before suggesting a solution for the problems involved, both of Public Health and curative medicine, the Committee formally records its feeling that:

"At this point the Committee thinks it imperatively necessary to declare, with the utmost possible emphasis, that no policy of preventive or curative solicitude for public health can succeed in a community which does not give economic security to all its people. Adopting an ancient maxim, the Committee affirms that a nation must guarantee to each of its members an assured livelihood before it can promise him that irreducible minimum of health without which he can be neither a fully useful citizen nor a normally happy human being. Having sounded this warning note, the Committee returns to the task that Parliament has set it, of reporting upon one phase only of national life, considered for the moment, as if it could be isolated from all other phases."

[*There is here a very sound grasp of the fundamental importance of economic security in any scheme of health legislation.*—EDITOR.]

The Report then turns to details of various activities such as sanitation, maternity benefits, tuberculosis, mental hygiene, and so on.

MEDICAL SERVICES

Under the heading of Medical Services the Committee makes the rather plaintive comment that medical witnesses generally have been more directly interested in the nature of and conditions under which medical services would be provided, than in the policy of providing a general medical service to all in the community.

[*An editorial comment (Medical Journal of Australia, July 17, 1943) on this protests mildly against this remark, and states that the profession is genuinely anxious to co-operate with the Government in solving the question of improving health services.*]

The Report continues:

"We consider, therefore, that a general medical service should be instituted, as the best and most equitable means of providing medical care for the community as a whole; and that this should be financed from a central fund specifically raised for the purpose by a tax on income, having regard to the capacity of the individual to pay.

CAPITATION AND PANEL SYSTEM

"There has been considerable opposition to the system of payment for medical service by a capitation fee under the panel system, which is generally associated with National Health Insurance. This system is also one of those in operation under the New Zealand *Social Security Act (Health Benefits)* 1938. The official attitude of the Federal Council of the British Medical Association as advised in May, 1943, is opposed to this system. It would appear that this opposition is influenced by conditions and experience of it under National Health Insurance in Great Britain, where, it is alleged, it had resulted in a lowering of the standard of medical practice owing to practitioners having enrolled on their panel lists numbers of patients out of all proportion to the number that they could effectively attend medically; and in New Zealand, where it is claimed the capitation fee and conditions were unreasonable and unacceptable to practitioners. The system is also subject to abuse by patients making unnecessary calls for medical attention. On the other hand, the capitation fee system with strict limitation of the panel list, was strongly urged in evidence by Dr. R. J. Verco, President, South Australian Branch of the British Medical Association, and by Dr. T. A. Price, a Past President, Queensland Branch of the British Medical Association. Both these witnesses gave this as their personal and not their official opinion.

FEE-FOR-SERVICE SYSTEM

"The weight of medical evidence is strongly in favour of a system of fee-for-service payments to medical practitioners in any general medical service except in remote areas. This, no doubt, is genuinely influenced by a desire to retain private medical practice in its present form and to relieve the medical profession of the responsibility of continuing to provide a free general practitioner service to the poor, and free specialist services as 'honoraries' at public hospitals. In Queensland, the latter system has been replaced by a part-time salaried specialist service which has proved satisfactory and acceptable to all parties. The medical profession would have much to gain by the introduction of a fee-for-service system of payment, but the system is open to grave abuse by both patient and doctor, and against this no adequate means of protection has been suggested. Neither has there been any suggestion as to any compensating reduction in fees or other concession, in return for the increased incomes practitioners would receive under fee-for-service payments for all attendances. Fee-for-service is one of the alternative methods of payment under the New Zealand *Social Security Act (Health Benefits)* 1938.

"There is general support from the medical profession for the organization of medical practice in groups where complete modern equipment could be provided at a more reasonable cost to patients.

"There has been considerable evidence in favour of a full-time salaried medical service as affording the only satisfactory basis for a National Health Service, and, at the same time, providing more acceptable and more reasonable conditions of practice for the practitioner and of security for him and his family, under a system providing a salary, superannuation and adequate provision for regular postgraduate studies. It is claimed that such a system would tend to direct the chief interest of the medical practitioner towards preventive rather than curative medicine. Support for a salaried medical service appears to be growing, and this is perhaps influenced to some degree by the deterrent effect upon the earning of very high incomes of the present very high rates of taxation. Notwithstanding this statement, the support of a salaried medical service by many leading practitioners and specialists is undoubtedly inspired by the highest motives and a sense of public duty. The weight of medical opinion appears to be against a full-time salaried service, but as mentioned earlier in this Report, it has not been possible to obtain the views of the large numbers of medical practitioners in the defence forces, and it is possible that these, if known, might affect the attitude of the profession as at present indicated.

"While, therefore, there is pronounced opposition to the scheme outlined by the National Health and Medical Research Council which visualizes a system of governmental control of all health services, there is considerably less opposition to such a service if control is vested largely in the medical profession, through an independent body with statutory authority and removed from political control. Indeed, upon this aspect of administration there is almost complete unanimity. Such freedom from political control is essential for the success of any scheme. Undoubtedly, a large section of opinion regards a full-time salaried medical service as a revolutionary proposal which might seriously affect the medical profession and its services, and, in fact, the existing social order. For this also they oppose it.

PROPOSED MEDICAL SERVICE

"The Committee has heard a great deal of evidence on, and has given very careful consideration to a medical service for Australia, probably the most important aspect of Health Service that we are called upon to determine. We feel that the existing deficiencies in the nature and availability of medical services can only be remedied by a substantial reorganization of, and improvement in, such services. We have carefully deliberated upon the 'Capitation Fee and Panel', and the 'Fee-for-Service' systems for the payment of general medical services, but are unable to agree that either would, if adopted, be anything more than an expedient, and we feel that neither is likely to provide a permanent and satisfactory solution. Moreover, both these system are open to abuses against which no adequate protection has been suggested.

SALARIED MEDICAL SERVICE PROBABLY BEST

"We believe, in view of the comprehensive nature of the services required and the difficulties in otherwise providing such services satisfactorily; the need for placing the health of the people above all other consideration; the need for elevation of the medical practice to the highest plane of public duty, and the need to provide the greatest possible incentive for

medical scientific research and also facilities for post-graduate study, that the ultimate solution will probably be found in a full-time salaried medical service with standardized uniform hospital provision, within which complete medical hospital and public health services will be available to all and will be financed by a tax on incomes for this purpose. Within such a service promotion should be purely on merit. Such solution, however, must be regarded on the long range objective, since, apart from the insuperable obstacles to its introduction at this stage or until after the war, it is opposed, at present, by a large majority of the medical profession whose co-operation is vital to the success of any plan. So drastic a change would be considered revolutionary and, therefore, should not be introduced, except by evolutionary developments over a period of years. Moreover, the gradual development, in controlled stages, of a long range plan, would enable its real merits to be thoroughly tested by practical experience.

ADMINISTRATION

"Important among the basic principles of any Health Scheme to be determined, is the form of administration, and this involves a clear conception of the nature of the service to be provided. Assuming that health services are to be Commonwealth-wide in scope, and are to be financed from a Commonwealth fund raised by taxation for the purpose, it will need to be determined whether (*a*) with consent of the States, the scheme will be administered by the Commonwealth, as a Commonwealth service, under a system of decentralized authority, or (*b*) the Commonwealth will lay down the broad principles of a health service and general hospital standards, and subject to acceptance of these principles and standards, will finance the States under a system of grants-in-aid, in order that uniformity of health services and hospital standards may be established generally throughout the whole of the Commonwealth.

"Under a Commonwealth controlled and financed comprehensive health service, *i.e.*, embracing public health, preventive medicine including research, general medical services and hospital services, a central Commonwealth authority such as a Commonwealth Health Commission would be necessary, to lay down and direct a policy to establish approved standards for public and private hospitals, to control medical personnel and services and, generally to co-ordinate the activities of the various subsidiary State authorities. The personnel of such a Commission might consist of: (*a*) A Chairman selected from a small panel nominated by the Medical Profession. (*b*) A Medical-hospital administrator selected from a small panel nominated by the medical profession; and (*c*) the Commonwealth Director-General of Health and Chairman, National Health and Medical Research Council, appointed for a term of five years.

"An alternative to the above personnel might be a Commission of five consisting of (*a*) a Chairman and two medical members selected from a panel nominated by the medical profession, one of whom shall be a medical hospital administrator and one a general practitioner; (*b*) the Commonwealth Director-General of Health and Chairman, National Health and Medical Research Council; and (*c*) one lay representative, with special qualifications and wide experience of finance.

"As compared with a Commission of three medical men, the latter proposal has the advantage that the lay member could also be regarded as the representative of the public, appointed by the Government."

The Report closes with the admission that it is necessarily inconclusive, on account of the unforeseen parliamentary situation. Further study of the whole question is urged.

Men and Books

ROLPH BIDWELL LESSLIE, M.A., M.D.(Tor.)

By J. H. Elliott, M.D.

Toronto

A most attractive biography and one which has achieved great popularity is "Sir Richard Burton's Wife" written by Jean Burton.* The author was a student in the University of Saskatchewan and graduated from the University of British Columbia. It is a delightful story of a beautiful woman infatuated with and devoted to, a most unusual man, keen to be with him in his wanderings and his studies of primitive races, ever watchful of him through his declining days. In 1889 after a serious illness it was found necessary to have a resident doctor always with them, so "they telephoned from Cannes to England for Dr. Ralph Leslie, a Canadian from Toronto" who travelled with them to Trieste where Sir Richard made a speech at a dinner at the British Consulate on the occasion of Queen Victoria's Jubilee. "It was a blow when Dr. Leslie was called away later in the year. He was so good humoured, and above all had a true reverence for Richard. Richard did not want any other doctor."

This reference to Dr. Rolph Lesslie of Toronto suggested more detailed information. Referring to the list of graduates of the University of Toronto there is a record of Rolph Bidwell Lesslie, B.A., 1873, M.A., 1875, registered at University College, graduating M.B., 1875, and receiving his M.D. (Tor.) in 1876. From the London Medical Directory, 1890, we further learn that he became a Licentiate of the Royal College of Physicians and a Fellow of the Royal Geographical Society, that he was created a Chevalier of the Order of Leopold and a Chevalier of the Order of the Congo Star for distinguished service in Africa, that he served as Surgeon-major to the Turkish forces in the Serbian war, was present at the siege and capture of Alexinatz, continued with the victorious army on the march from Alexinatz across the Balkan Mountains to the Danube, was awarded the Turco-Serbian and the Turco-Russian medals, and was invested with the Order of the Medjidie, 4th Class. He also served with the British forces in the Zulu war, receiving the ribbon and medal of this campaign. This active and adventurous graduate of the University of Toronto died in Dominica, September 20, 1893.

Dr. Charles S. Ryan, a young Australian doctor, who served with the Turkish forces, writes in his reminiscences† that he recalls

* Ryerson Press, Toronto, 1941.

† Under the Red Crescent: Adventures of an English Surgeon with the Turkish Army at Plevna and Erzerovm, 1877-1878, Charles S. Ryan, London, 1897.

meeting Rolph Lesslie at Nish, Turkish army headquarters some thirty miles from Alexinatz in Southern Serbia, then under siege; "Another of my comrades at Nish was Rolph Lesslie a Canadian who has had a fairly adventurous career, and was afterwards with Stanley on the Congo. He was a nice young fellow; but he used to read *Gil Blas* to me in French when I was in bed at night and required all my energies to circumvent the strategy of the Bulgarian insects."

A brother, Joseph W. Lesslie, born in 1854, and educated at Upper Canada College graduated in 1879 and took his M.D. degree in 1880. He was for many years surgeon to the Queen's Own Rifles. He served with them in the North-west Rebellion in 1885, received the 1885 medal and clasp, was mentioned twice in despatches and was in action at Cut Knife Hill. His ambulance corps in the Q.O.R. was the first in Canada. His wife was the daughter of William Willcocks Baldwin, a granddaughter of Hon. Robert Baldwin whose father, Dr. William Warren Baldwin, first came to York in 1798.

Apart from the Baldwin-Lesslie connection established by this marriage, a short inquiry into the Lesslie family reveals much that is related to the history of Upper Canada. What associations are recalled by the name of Sir Richard Burton's physician, "a Canadian from Toronto"—Rolph Bidwell Lesslie! It was the Lesslie family from Dundee, Scotland, settled in business in Dundas, U.C., who brought William Lyon Mackenzie to Canada. It was in the home of his uncle, James Lesslie, Secretary of the Canadian Alliance Society, of which W. L. Mackenzie was president, that meetings of the opponents of Francis Bond Head and his government were held. Rolph and Bidwell were the leaders of the Reform party in the Provincial Assembly, of which Bidwell was twice elected speaker. James Lesslie and a brother were arrested and jailed, charged with complicity in the Rebellion of 1837, but were discharged without trial. Bidwell, we are told by Francis Bond Head in one of his essays, was given the option of leaving the country forever with a package of unopened letters presumably treasonable, or to have them opened and face the consequences. He left promptly for the U.S.A. where he had a brilliant and successful legal career. Rolph, charged with treason, escaped to the United States, a reward of £500 on his head.

Rolph Bidwell Lesslie was the elder son of Joseph Lesslie. His mother was Sara Elizabeth Graham, a daughter of Dr. James Graham, a surgeon on the medical staff of Upper Canada, and serving principally with the forces in the Niagara district through the war of 1812. The association of the Lesslie family with Hon. John Rolph was not only political, for Rolph Bidwell's mother was born on a farm in Norfolk County which had been purchased from Dr. Thomas Rolph, the father of Hon. John Rolph.

Dr. James Graham, the grandfather of Rolph Bidwell Lesslie, was born in Wyoming in the valley of the Susquehanna, Pennsylvania, in 1782, of Scotch parentage. The family came to Canada in 1786, a short time after the Wyoming massacre and located on wild land in the County of Oxford, where seven children were born. James studied medicine at Grimsby in the office of Dr. Cyrus Sumner who, coming from the U.S.A., passed the medical board at York in 1804. His examiner was William Warren Baldwin.

Both Dr. Sumner and Dr. Graham were Assistant Staff Surgeons during the war of 1812, and after the close of the war were examiners for the Pensions Board, the one at Grimsby, the other at Long Point. Canniff* says Dr. Graham married in 1813 Elizabeth Sutherland, daughter of Col. Sutherland, of the Glengarry Highlanders, while on page 643 he says Elizabeth Brant the youngest daughter of Dr. Cyrus Sumner became his wife.

Dr. Graham received the Prince Regent's land grant for services during the war. At the close of the war he purchased from Dr. Thomas Rolph a farm in the Township of Wodehouse, Norfolk County, where he developed an extensive practice while carrying on his farm work. Two of his sons, Thomas Rolph Graham and John Rolph Graham, became physicians, the latter being a student at the Rolph School of Medicine in Toronto, and in practice at Tilsonburg to his death.

Joseph Lesslie (1813-1904) the father of Rolph Bidwell born in Dundee came to Canada with his father Edward in 1819, the large family settling in Dundas, and soon established business in Dundas, York and Kingston. Joseph was educated in Rochester and Boston, became Editor of *The Examiner* (later *The Globe*), and later purchased a farm in Norfolk County near that of Dr. James Graham, and here he married Sarah Elizabeth Graham. After two years of farming he moved to Toronto and was appointed superintendent of York roads, and in 1853 postmaster, which office he held until pensioned by the MacDonald Government in 1879. Before this appointment he had campaigned for Hon. Robert Baldwin, whose granddaughter his son Dr. Joseph W. Lesslie later married.

The Ralph Leslie of Jean Burton is Rolph Bidwell Lesslie. His adventurous career and his success in his undertakings can be understood when one recalls his forebears and their associates. The Lesslies, pioneer wholesale and retail merchants in three Upper Canada towns, his maternal grandfather a pioneer settler in the province and one of the earliest to qualify in medicine, serving as Staff Surgeon through the War of 1812, the family intimately associated with the Reformers who secured representative

* W. Canniff, *The Medical Profession in Upper Canada*, Briggs, Toronto, 1894, p. 391.

government for Upper Canada, what wonder that he and his brother served their country seeking military service and constructive work in the Militia and the Army, in Zululand, the Congo, the Balkans, and the North-west.

CATECHISM IN MEDICAL HISTORY

By Heber C. Jamieson, M.D., F.R.C.P.(C)

Edmonton

QUESTIONS

1. What experimental work preceded the discovery of insulin?
2. Who introduced rubber gloves into surgery?
3. What is another name for chorea and how did the name arise?
4. What evidence have we of clinical teaching in ancient times?

ANSWERS

1. In 1683 Brunner, of Brunner's glands fame, removed the pancreas from a dog and noted extreme thirst and polyuria. In 1849 Claude Bernard produced hyperglycæmia and glycosuria from piqure of the fourth ventricle. He originated the theory of the glycogenic function of the liver. In 1869 Langerhans discovered the islands which bear his name. In 1889 von Mering and Minkowski demonstrated that severe and fatal diabetes followed complete pancreatectomy. In 1901 Opie and in 1902 Ssoblew showed that the islands of Langerhans were the elements responsible for diabetes. Ssoblew, 1902, pointed out that ligation of the pancreatic duct at first caused atrophy of the acinous tissue with no glycosuria, but later atrophy of the islands supervened and glycosuria resulted. It was this latter work that gave Sir Frederick Banting the idea of obtaining the secretion of the islands. This he did and the first injection of an extract containing insulin was administered on January 10, 1922.
2. William Stewart Halsted (1852-1922), Professor of Surgery at Johns Hopkins University. He was the chief exponent of the radical operation for amputation of the breast.
3. St. Vitus Dance, or the Dance of St. John. In Europe during the fourteenth century a dancing mania occurred. In various cities groups of people engaged in wild dances, losing all sense of their surroundings. For hours they whirled about and groaned until exhaustion left them lying in the street. Their bellies were distended and cloths had to be pulled tightly about their waists to give relief. Gradually recovery would take place, but soon another delirium would seize them and the dance went on.
4. Martial (40 A.D.) wrote:

   "I'm out of sorts, but Symmachus is here,
   His hundred pupils following in the rear;
   All feel my pulse with hands as cold as snow,
   I had no fever then—I have it now."

Divisions of the Association

The Prince Edward Island Medical Society

The annual meeting of the Prince Edward Island Medical Society was held on July 11, 1943, at the Charlottetown Hotel, Charlottetown, P.E.I. Dr. E. S. Giddings, Charlottetown, was elected *President*.

Vice-presidents elected in the three counties for the ensuing year are: Prince, Dr. Henry Moyse, Bedeque; Queens, Dr. H. H. Pierce, Charlottetown; Kings, Dr. A. Kennedy, Georgetown. Other officers elected are: *Secretary*—Dr. A. J. Murchison, and *Treasurer*—Dr. I. J. Yeo, both of Charlottetown.

At the morning session Dr. W. McBride, Kensington, retiring president, presided and at the afternoon session, Dr. E. S. Giddings. Medical problems were discussed at the morning session. Dr. D. Sclater Lewis, President of the Canadian Medical Association, and Dr. T. C. Routley, Secretary of the Canadian Medical Association, as guest speakers at luncheon, spoke on the Canadian Medical Association.

The afternoon session was a clinical one and papers were presented by Dr. Roscoe Graham, Toronto, on "Carcinoma of the cæcum and left colon", Dr. Kenneth MacKenzie, Toronto, on "Cranial cerebral injury", and "Extruded intervertebral disc", Dr. F. W. Tidmarsh, of Charlottetown, on "The newborn period", Drs. I. Rachmel and J. C. Houston, on "Anæsthesia in the Prince Edward Island Hospital", Dr. D. Sclater Lewis, on "Indications for digitalis therapy".

Division de Québec

L'Association médicale canadienne (Canadian Medical Association) (division de Québec) a tenu son congrès annuel, à Québec, les 9 et 10 septembre 1943. Un grand nombre de médecins, venus de toutes les parties de la province, ont suivi, avec beaucoup d'intérêt, les séances qui ont eu lieu dans quatre hôpitaux de la ville: L'Hôtel-Dieu, l'Hôpital-Laval, L'Enfant-Jésus et Saint-Michel-Archange. Les travaux scientifiques présentés en anglais et en français par les membres du personnel médical des institutions respectives ont été marqués au coin de l'intérêt le plus pratique et ont ainsi contribué à réaliser des séances captivantes.

En plus de deux déjeuners offerts par l'Hôtel-Dieu et l'Hôpital Laval, l'aspect social du congrès a surtout consisté en un garden-

party à la résidence de Son Excellence le lieutenant-gouverneur de la province, à Spencer-Wood. L'affabilité coutumière de Sir Eugène Fiset, particulièrement lorsqu'il reçoit ses collègues en médecine, jointe à la charmante hospitalité de Lady Fiset, a créé une profonde impression, faite de grandeur et de cordialité, auprès de tous les congressistes.

PIERRE JOBIN

Medical Societies

Saskatoon and District Medical Society

The meeting of the Saskatoon and District Medical Society was held on November 2, 1943, at which meeting the Saskatchewan Government was commended for its action in starting up a poliomyelitis clinic at the Saint Paul's Hospital, in Saskatoon, in order to cope with the outbreak of poliomyelitis in the northern part of the Province.

The hospital is extending its facilities in order to handle this clinic.

H. D. HART

Société des Hôpitaux Universitaires de Québec

La première journée médicale, organisée par la Société des Hôpitaux universitaires de Québec, à l'intention des médecins de la ville et des environs, a eu lieu le 8 septembre dernier à la Faculté de Médecine. La nouvelle bibliothèque de la Faculté avait été, pour la circonstance, transformée en bureau d'enregistrement où 350 médecins se sont inscrits.

A la séance du matin, les congressistes furent accueillis par le docteur Roland Desmeules, F.R.C.P.(C), président de la Société des Hôpitaux universitaires, par le docteur Charles Vézina, F.R.C.S.(C), doyen de la Faculté de Médecine et par Monseigneur Cyrille Gagnon, P.A., V.G., recteur de l'Université.

Le programme scientifique des deux séances du matin et de l'après-midi portait sur des sujets éminemment pratiques qui ont été écoutés avec beaucoup d'attention et les nombreuses discussions qui suivirent ont manifesté tout l'intérêt que ces présentations comportaient.

Dr Honoré Nadeau: Le régime des hépatiques; Dr Florian Trempe: Les varices; Dr René Simard: La ménopause; Dr Emile Gaumond: Les dermites en clientèle.

Dr Richard Lessard: Quand et comment employer les sulfamidés; Dr Antonio Martel: Traitement de la dysménorrhée fonctionnelle; Dr Jean-Baptiste Jobin: L'hypertension artérielle: causes et traitement; Dr Charles Vézina: Les syndrômes aigus de l'abdomen.

Avant le grand dîner, qui devait réunir 525 convives au Château Frontenac, la Société des Hôpitaux universitaires a offert un vin d'honneur aux médecins et à leurs épouses.

PIERRE JOBIN

Correspondence

In England Now

To the Editor:

[After some personal references to the editorial appointment the writer continues:]

I don't congratulate you because you have now become one of a species of which I have rather an unfavourable opinion! This opinion is founded on a certain dislike I have of their custom of refusing my literary contributions.

We have had a comparatively peaceful time here for some months. The last air raid we had took place at night in the small hours. We were awakened by the sound of the siren and heard the hum of aeroplanes. It pays to get up when you hear that combination. If an incendiary bomb falls on your house and you are in your pyjamas your natural delicacy prevents you from focussing all your attention on putting out the fire. On this occasion we were hustling into our clothes when we heard bombs exploding, not very near but not very far off. We looked out at the back of our house and could see fires so we took our steel helmets and gas masks and toddled down to the Shaldon First Aid Point of which I have charge. The Hun had made off but you can never be sure he won't come back. We found the personnel assembled but no casualties. A messenger brought word that a near-by hotel had been hit. As we had a friend living in it Jean and I went there to investigate. A bomb had dropped in the road in front and completely wrecked one-half of the building, leaving the other half very little damaged. Only one person, a servant, had been sleeping in the wrecked half and she by a miracle was unhurt. When we groped our way in at the front door the lights were all off and the floor of the hall covered with broken glass. We found our friend unhurt and quite unperturbed. We offered to put her up but she was quite content to finish the night in the bedroom where she had been sleeping.

Not long after this there was a daylight raid on a neighbouring town. We could hear the rumble of the exploding bombs quite distinctly. I was telephoned for and we motored over. I saw the best example I have yet seen of really competent first-aid work. A bomb had been dropped among a crowd of summer visitors bathing on the sands. A big R.A.F. man was hit by a bit of bomb casing high up in front of the thigh. The femoral artery and vein were opened. Some first aider put on a tourniquet which not only stopped all bleeding but stayed in position while the wounded man was removed to hospital. If the wound had been an inch higher I don't think a tourniquet could have been used. The patient was transfused and I gave him an anæsthetic while the vessels were tied and again later when the leg was amputated. One of our patients was horribly

burned by the flames from a Hun plane which came down almost on top of her. Fortunately for her she died. Another woman was disfigured and almost blinded by the explosion of one of our own A.A. shells that had failed to explode in the air.

You may like to know how we are faring in the matter of food. So far as I am concerned I have absolutely no complaint. Jean finds things a bit difficult because she feels it incumbent on her to provide variety and that means wracking her brains. (She, of course, does all the cooking. Domestic servants are as rare as hens' teeth. I am the housemaid. I am a fright with a carpet sweeper.) We have meat once a week and we make our modest ration last three days. The butter and margarine we consume daily amounts to about what I used to leave on my plate at one meal in Canada. Some people make a fuss about eating margarine but I can honestly say that now, after four years of war, I can't tell the difference between it and butter. We have become great vegetable eaters. We aren't and never will be vegetarians however. Apparently a certain amount of meat in the diet keeps one free from the mental defects of that species of crank.

It is lucky that the price of necessities is controlled. Salmon is not a necessity and when it was in season the price was a scandal. Grapes are not a necessity. A Harley Street skin specialist told me that a munition worker who came to consult him bought a bunch of grapes for 30/- as he was passing along Piccadilly. By the time he arrived he had finished them. Thirty shillings worth gone down the maw of a man who in peace time would have been going to see his panel doctor! Ronald Coldrey, my medical adviser, told me that one of his patients, a summer visitor at Teignmouth gave him a drink of sherry, Bristol Cream. The bottle had cost £7.0.0. It used to cost $4 in Montreal. The general health of the people of Great Britain is said to have been improved since the beginning of the war. I understand that there is much less appendicitis among the civil population than among the armed forces. This is supposed to be due to the much smaller amount of meat eaten by civilians. Most people find that they have become thinner. I can't say I have noticed any change in myself. By the way did you ever notice that there are far fewer fat men in England than in Canada or the United States?

I have had a good deal of amusement out of two letters I wrote to *The Spectator*, one in August and one in September. They have brought me more than twenty personal letters all but two expressing the heartiest approval of the plan I suggested for preventing the Germans from starting another world war. I am for treating them as they would have treated us if they had conquered Britain. Hitler intended to starve our population down to fifteen million. I would starve the population of Germany down to about the numbers of France or Poland. The carrying-out of the details could be entrusted to the nations whose countries have been over-run. It sounds a bit cruel, but would really be humane. If we don't do it to the Boche he will do it to us and to other countries as well. He will wreck civilization.

The Spectator last April published an article with the title "The Bill against Germany", which made me feel like despairing. The writer urged the importance of taking measures to prevent Germany from causing another war "at any rate in the lifetime of this generation". Did you ever hear of anything so maudlin as the scheme to send instructors to Germany to teach the Boche to be kind and good to his neighbours? I haven't heard yet an estimate of the length of time we shall have to keep an army in Germany. Not more than a couple of centuries, I suppose. There are two schools of thought about the treatment of the Boche. The majority of the people here belong to the "Pet the Boche" faction. I am one of the minority, the "Soak the Boche" faction. However I may be giving myself unnecessary concern. I have a feeling that if Stalin gets his armies into Germany future generations of the Herrenvolk will experience a strong feeling of nausea whenever the word "war" is mentioned.

W. B. HOWELL.

October 13, 1943,
Shaldon, So. Devon.

The Canadian Medical-Dental Society of Kiska

To the Editor:

A Canadian Medical-Dental Society of Kiska was formed on Tuesday, September 14, 1943, composed of the medical and dental officers of the Canadian forces which have occupied this island.

The following officers were elected: *President*—Lt.-Col. T. M. Brown; *Vice-president*—Major W. D. Smaill; *Vice-president* (Dental)—Capt. J. Ludwig; *Secretary-treasurer*—Capt. J. F. McNichol.

The society meets each Monday evening when topical subjects are presented for discussion and problem cases are considered.

At the first regular meeting on September 20, 1943, papers were presented by Capt. Tomashuski and Capt. Paul Brady on "The surgical treatment of corns" and "Burns" respectively.

The meeting had a 100% attendance of Canadian medical and dental officers in this force.

J. F. MCNICHOL.

Kiska, Alaska,
C.A.P.O. 51,
Vancouver, B.C.

[*We extend our best wishes and congratulations to this latest and most recent addition to the medical societies in our armed forces.*—EDITOR.]

More Practical Training

To the Editor:

After one has spent a good number of years in the private practice of medicine, a fairly accurate survey can be made as to the needs of the education of the physician on the one hand, and the practical use of such to the community on the other.

My survey leads me to believe that our medical schools, hospitals, and universities are not functioning to the best of their ability in the training of the physician. Too much stress is placed on the academic side, and too little on the practical.

When a physician goes into a community it is not to lead the social or literary societies, nor to enter politics, but to help those who need his abilities as a physician. Too many doctors on the Prairies are growing worn and poor as time progresses, simply because of this inadequate preparation, whilst half-educated persons in the cities are waxing wealthy, doing, in office hours, what should be done by physicians. One need only mention the chiropractors, naturopaths, optometrists, and chiropodists, to realize what is being usurped from medicine. There is not a city in Canada which would not be benefited by three times the number of oculists, who must be good refractionists, and by some good foot surgeons. I might say, by way of encouraging more oculists, that the refractions in this office average practically one hundred per month, and that can be equalled by any physician who applies himself to the work and is particular about his results. I contend that refraction should be taught as a major subject in the fifth year of the medical course.

If more physicians would take postgraduate courses in refraction, instead of surgery, there would be less of them in poor circumstances when they should be ready to retire. We need twice as many physicians as we have, so that this work may be reclaimed by those who should be doing it.

BENJ. H. HARRY.

October 20, 1943,
625-26-27 Birks Bldg.,
Vancouver, B.C.

The danger of outbreaks of food poisoning in wartime owing to lapses in sanitary hygiene has been emphasized by Dr. C. E. Dolman, who, writing in the *Canadian Journal of Public Health*, refers to the importance of adequately pasteurizing milk and milk products in particular and of educating and controlling food handlers and of raising the level of communal sanitation in general. He describes how an outbreak of typhoid fever in Vancouver was traced to the consumption of shelled crabmeat which, after efficient boiling, was washed in the waters of a creek contaminated with typhoid bacilli derived from hospital sewage.—*J. Roy. Inst. Hyg. & Pub. Health*, 1943, 6: 248.

Special Correspondence

The London Letter

(From our own correspondent)

HEALTH IN 1942

The Ministry of Health has now published the vital statistics for 1942 and they really are remarkable as low records, and would be remarkable even in normal times. The death rate among civilians was the lowest ever recorded and this was also true for the maternal death rate and the infant mortality rate.

But this record-breaking year has some black spots in it if the question of morbidity is studied. Venereal disease has definitely increased, and although the mortality from tuberculosis was lower in 1942 than in 1941, there was a rise in the number of new cases. There is also evidence of an increase of short-term illnesses which have led to rising claims to sickness benefit in the insurance schemes. This is attributed to some extent to the effect of the war in its 4th year, but as an explanation this is not altogether satisfactory because long-term illness and infectious diseases are definitely down in their incidence.

As stated already, the infant mortality rate touched a new record, falling below 50 per thousand births in England and Wales for the first time. This is just one-third of what it was at the beginning of the century, and such a reduction might be a matter for great congratulation were it not for the fact that there is a great disparity between the social classes, so that we may find double the numbers of babies dying in certain towns of the north-west as compared with towns in the south and west. Moreover, according to the detailed work of a statistical expert, the rate of fall in the infant mortality rate has not been the same in all classes and has in fact been steeper in the higher social grades. In other words, today the chance of survival is still related to income and social environment. There is no room for complacency in the health services, and still much to be done.

HEALTH OF NURSES

Last month some details were given of a report by the King Edward's Hospital Fund authorities on diet in hospitals, and the same organization has now issued a memorandum on the health supervision of nurses and their care when sick. Although high standards are reached in many hospitals, there is no general accepted minimum and in the new memorandum this latter has been attempted. Attention is paid to the dangers of tuberculosis, and periodical x-ray examinations of the chest are provided for. The Prophit research work of the Royal College of Physicians has been dealing almost exclusively with this problem of tuberculosis among nurses and a report is shortly expected.

In the meanwhile the new memorandum points out that a nurse in a general hospital is not so well safeguarded against tuberculosis infection as are those working in sanatoria. Of course, it may be argued that the patients ought not to be in general hospitals but at the present time with a shortage of sanatorium beds, this is inevitable, and clearly it is the duty of hospital authorities to minimize the risks for the nurses under their care.

Perhaps a recent county-court decision may frighten some of the hospital committees who have hitherto been slack in this matter, for earlier this year it was ruled that a nurse, who acquired tuberculosis at a chest hospital, was liable for compensation on the basis that this was an "accident". Fortunately for the nurse a series of radiograms made it quite clear that her disease had not been present when she began her work but had developed in the course of her duties.

HEALTH IN INDUSTRY

In a recent report of the chief inspector of factories the point is made once again that long hours of employment do not make for good output. This was proved scientifically in the last war and yet so many employers still stick to the primitive idea that there is no limit to the equation "more hours of work equals higher output". What is more alarming is the hint of illegal over-work including a case in which girls of 14 to 15 were found to be working nearly 60 hours a week including Saturday afternoons and Sundays. But in general, health in factories must be pretty good, or the health figures of the nation would show poor results.

What, perhaps, is more important is a growing change of view that industrial medicine is not merely a study of poisonous conditions but should include guidance in the selection of work, the length of the working hours and a close supervision of general working conditions. A recent survey in Scotland showed that over half of the young workers referred under a special scheme by practitioners with vague conditions of debility and ill-health, required convalescence or hospital investigation. About 10% were unfit for work and about 6% needed change of employment. At long last we are getting accurate surveys upon which a national policy for industrial hygiene can be based.

ALAN MONCRIEFF.

London, November, 1943.

Canadian Medical War Services

MEDICAL OFFICERS APPOINTED TO THE R.C.A.M.C. — ACTIVE FORCE OCTOBER, 1943

(Previous sections appeared in the February, March, May, July, September and November, 1943, issues)

SECTION XIX

Name	Address	Date of Appointment
Allen, L. P.,	Quebec	12-9-43
Allison, J. C.,	Belleville, Ont.	1-9-43
Anderson, T. A.,	Fredericton, N.B.	1-9-43
Angelle, E. P.,	Deer Lodge, Man.	17-9-43
Aubé, R.,	Hebertville, Que.	12-9-43
Baillargeon, T. L.,	Quebec	12-9-43
Bean, I. W.,	Regina, Sask.	1-10-43
Beaubien, F.,	Bergerville, Que.	12-9-43
Beauregard, L.,	Beaupré, Que.	12-9-43
Bethune, G. W.,	Baddeck, N.S.	1-9-43
Bethune, R. W. M.,	New Glasgow, N.S.	1-9-43
Bland, S. S.,	Halifax	1-9-43
Bracken, A. D.,	Winnipeg	1-10-43
Brook, M. H.,	Saskatoon	12-10-43
Brown, T. C.,	Toronto	9-9-43
Buckwold, A. E.,	Saskatoon	1-10-43
Cayer, J.,	St. Hyacinthe, Que.	12-9-43
Charman, J. H.,	Halifax	1-9-43
Cormier, W.,	Quebec	12-9-43
Crowe, J. B.,	Annapolis Royal, N.S.	1-9-43
Cruickshank, W. H.,	Toronto	7-9-43
D'Etcheverry, A.,	Sherbrooke, Que.	12-9-43
Dewar, L. G.,	New Perth, P.E.I.	30-8-43
Downing, J. B.,	Summerside, P.E.I.	30-8-43
Dunsworth, F. A.,	Halifax	1-9-43
Dupré, G. H.,	Quebec	12-9-43
Duval, P.,	Quebec	12-9-43
Feuiltault, R.,	Giffard, Que.	12-9-43
Fortin, G.,	Ottawa	12-9-43
Fradette, A.,	Matane, Que.	12-9-43
Fraser, K. A.,	Whycocomagh, N.S.	30-8-43
Fryer, G. E.,	Winnipeg	18-10-43
Fugère, P.,	Quebec	12-9-43
Gaum, D.,	Sydney, N.S.	1-9-43
Gardner, H. L. C.,	Regina, Sask.	13-9-43
Gauthier, P.,	Quebec	12-9-43
Gauvreau, L.,	Quebec	12-5-43
Gérin-Lajoie, G.,	Coaticook, Que.	12-9-43
Gosselin, A.,	Quebec	12-9-43
Grenier, E.,	Ste. Thérèse, Que.	12-9-43
Harris, R. I.,	Toronto	31-7-43
Henry, W. J.,	Pt. Arthur, Ont.	1-10-43
Jacques, M.,	Quebec	12-9-43
James, M. M.,	Kingston, Ont.	21-9-43
Katz, M.,	Saskatoon	24-9-43
Keays, J. F.,	Newcastle, N.B.	30-8-43
Lavers, H. D.,	Parrsboro, N.S.	1-9-43
Leighton, C. M.,	Moncton	1-9-43
Lewis, A. S.,	St. Johns, Nfld.	17-8-43
MacKenzie, R. G.,	Truro, N.S.	1-9-43
MacLeod, L. A.,	Glace Bay, N.S.	1-9-43
MacNeill, N. F.,	Glace Bay, N.S.	1-9-43
Massé, L.,	St. Eloi, Que.	12-9-43
Maxwell, J. A.,	Calgary	1-10-43
Molloy, J. H.,	St. Johns, Nfld.	1-9-43
McKean, H. R.,	Truro, N.S.	1-10-43
McKee, D. B.,	Owen Sound, Ont.	1-9-43
Nadeau, C.,	Ste. Anne de Beaupre, Que.	12-9-43
O'Connor, L. N.,	Kingston, Ont.	1-10-43
Ostrovsky, S.,	Montreal	16-8-43
Paradis, B.,	Quebec	12-9-43
Park, A. M.,	Toronto	1-9-43
Pelletier, G. E.,	St. Lin des Laurentides, Que.	12-9-43
Perlin, I. A.,	Sydney, N.S.	1-9-43
Poitras, P.,	Roberval, Que.	12-9-43
Reingold, M. M.,	Toronto	1-9-43
Richardson, H. F.,	Larder Lake, Ont.	17-9-43
Ritchie, R. M.,	Sydney, N.S.	1-9-43
Simard, D.,	St. Elzear, Que.	12-9-43
Simms, D. C.,	St. Johns, Nfld.	1-9-43
St. Laurent, J.,	Causapscal, Que.	12-9-43

Name	Address	Date of Appointment
St. Pierre, R.,	Cap de la Madeleine, Que.	12-9-43
Sullivan, J. R.,	Fairville, Que.	1-9-43
Sutherland, D. F.,	New Glasgow, N.S.	1-9-43
Tardif, A.,	Quebec	12-9-43
Therrien, R.,	Quebec	12-9-43
Thivierge, C. M.,	Levis, Que.	12-9-43
Tonning, H. O.,	Black's Harbour, N.B.	30-8-43
Tupper, W. R. C.,	New Glasgow, N.S.	1-9-43
Tysof, J. F.,	Victoria, B.C.	1-10-43
Veniot, L. M.,	Bathurst, N.B.	1-9-43
Wilson, B. R.,	Halifax	1-9-43
Wolff, R. G.,	Cardston, Alta.	4-10-43
Wright, J. S.,	Bedeque, P.E.I.	30-8-43
Campbell, H. H.,	Canadian Army Overseas	9-6-43
Cowan, L. E.,	Canadian Army Overseas	15-2-43
Moffat, R. G.,	Canadian Army Overseas	12-11-43

MEDICAL OFFICERS STRUCK OFF STRENGTH OF THE R.C.A.M.C.—ACTIVE FORCE OCTOBER, 1943

Name	Address	Date struck off strength
Bailey, G. M.,	Montreal	
Conn, H. R.,	Toronto	22-7-43
Currie, G. C.,	Toronto	17-9-43
Gilday, F. W.,	Montreal	18-10-43
Leeson, L. H.,	Vancouver	30-9-43
Maddison, G. E.,	Halifax	1-9-43
Ross, A.,	Montreal	4-10-43
Williams, G. S.,	Winnipeg	5-7-43
Wright, H. P.,	Montreal	18-10-43

NOTE.—Bailey, G. M. and Maddison, G. E. were never appointed to the R.C.A.M.C. They were formerly shown as being appointed, and are therefore shown here as being struck off strength.

In Lighter Vein

THE IRON HOUSEMAN*

By W. B. Howell, M.D.

Montreal

The Iron Houseman is filled with pride
As he looks at the men he works beside.
Though they're flesh and blood and he's only steel
They give him quite a superior feel.
He's always on hand when he's required;
He's silent and strong, and he's never tired.
There's no need to tell him the same thing twice,
And he never gives the surgeon advice.
He's never lazy and never slack,
He never answers the surgeon back.
He's never sulky, he never perverse is,
He never ogles the pretty young nurses.
He never comes home from some party gay
The worse for liquor at break of day.
He's never seen in the morning, weary
With bloodshot eyes and a breath that's beery.
He's cool and polished and always serene.
He's the finest houseman that ever was seen.

* The "Iron Houseman" is a contrivance invented by the late Dr. Norman Bethune, and is used in thoracic surgery at the Royal Victoria Hospital, Montreal. It consists of a vertical steel rod which is clamped at one end to the side of the operating table. Attached to the other end is a second steel rod which is movable and can be set in any position. At the end of this movable rod is a retractor which is used to hold back one side of the incision.

Abstracts from Current Literature

Medicine

"Physiological" Changes in Breath Sounds and Tuberculosis. Ellison, R. T. and Gershon-Cohen, J.: *Am. Rev. Tuberc.*, 1943, **47:** 449.

The heretofore allegedly "physiological" changes in apical breath sounds (harshness and higher pitch in inspiration, and, particularly, loudness and prolongation in expiration) are regarded as of pathological origin, and attributed to hypoventilation of the postero-superior lung parts due to stiffening of the lung roots, which, in turn, results from tuberculous involvement of the hilar and tracheobronchial lymph nodes. With these altered breath sounds there was noted retraction of the apex and atrophy of the musculature and subcutaneous tissue of the upper chest. The results are based on the physical signs, tuberculin reaction, and x-ray pictures in 450 cases from birth to over 20 years. C. C. MACKLIN

Blue Scleræ, Brittle Bones and Deafness. Farber, J. E. and Margulis, A. E.: *Arch. Int. Med.*, 1943, **71:** 658.

Again a fairly extensive family tree of this syndrome is presented. The line of descent was always direct so that no person was affected, both of whose parents were normal. Blue scleræ were always present, and showed in 12 members in 4 generations; there being 40 normal persons. Of the 24 who had affected parents, 11 were affected, this being a very close approximation to the 50% expected affected when a dominant hereditary condition is involved such as blue scleræ. Eleven showed brittle bones as well as blue scleræ, and 4 gave evidence of deafness.
MADGE THURLOW MACKLIN

Familial Idiopathic Methæmoglobinæmia. Deeny, J., Murdock, E. T. and Rogan, J. J.: *Brit. M. J.*, 1943, **1:** 721.

A report of two "blue" brothers is made whose cyanosis was due to the presence of appreciable percentages (8) of methæmoglobin in the blood. As is known, this compound replaces oxyhæmoglobin and is quite stable, so that it does not break down under low O_2 tensions as does oxyhæmoglobin. There are only a few cases of familial idiopathic methæmoglobinæmia in the literature. The condition was treated with ascorbic acid, and the percentage of

methæmoglobin in the blood stream fell, coincident with the improvement in colour of the skin.

MADGE THURLOW MACKLIN

The Incidence of the Rh Factor and Erythroblastosis Fetalis in the Chinese. Levine, P. and Wong, H.: *Am. J. Obst. & Gyn.*, 1943, **45:** 832.

The possibility of the incidence of the Rh factor being different in different races was investigated in the Chinese race by these authors. They found that the values were widely different as compared with the white race. They give the following tabulation:

	Anti Rh 1, 2		*Anti Rh 1*		*Anti Rh 2*	
	+	−	+	−	+	−
150 Chinese	99.3%	0.7%	99.3%	0.7%	93.0%	7.0%
334 whites	87.0%	13.0%	85.0%	15.0%	73.0%	27.0%

NOTE.—If these percentages hold for the Chinese race in general, erythroblastosis fetalis should be extremely rare as a cause of fetal death, inasmuch as the percentages of positive persons is almost 100.

MADGE THURLOW MACKLIN

Surgery

Slow Union of Fractures. Watson-Jones, R. and Coltart, W. D.: *Brit. J. Surg.*, 1943, **119:** 260.

A series of 804 fractures of the shafts of the tibia and femur have been analyzed with the following main suggestions and conclusions: The very recently accepted principle of complete and uninterrupted immobilization of fractures has come under suspicion of causing a slowing down of the rate of union. This suspicion, however, applies only to fractures of the tibia and femur, and is unfounded. The main explanation is that the radiological evidence of union we demand today requires longer than the less dependable clinical evidence of an earlier day. Non-union is not inevitable and in this large series, with a high proportion of multiple, gravely comminuted, seriously contaminated, and heavily infected fractures, there was not one case of non-union, though there were many cases of delayed union.

General causes such as diet are not very important causes of slow union. The important factors are local. Three are outstanding: interrupted immobilization, infection of the fracture and dislocation of the fragments.

The most serious delaying factor in both closed and infected fractures is dislocation of the fragments. This is most harmful in the tibia where very slight distraction causes serious delay. A special warning is issued against methods of double pinning both fragments and attaching one of the exoskeleton-like apparatuses. Early weight bearing in any fixation apparatus causes delay in union.

Open reduction, even with plating, does not delay union if external fixation is applied as usual. The mistake is to depend on the internal fixation alone. Infection is not a cause of non-union though the time required for union is usually greatly prolonged. Early sequestrectomy is essential as is early skin-grafting and other means to promote healing in the soft tissues surrounding the facture site.

J. R. LACROIX

The Effect of Heparin on Wound Healing. Laufman, H. and Heller, R. E.: *Surg., Gyn. & Obst.*, 1943, **76:** 655.

Heparin is more frequently being used during operations, principally in the treatment and prevention of thrombosis. The question is raised as to what effect it may have on the healing property of wounds. Three-inch long incisions were made through the lineæ albæ of 80 dogs and a uniform method of suture was employed. One series of dogs was given multiple intravenous injections of heparin so that the coagulation was at all times kept above normal, ranging from 5 to 120 minutes. A control series was left without heparin. An ingenious contrivance of hooks and springs was used to disrupt the wounds after various periods of healing. This device registered the amount of tensile strength required to pull the wound edges apart. The results recorded are interesting and important. In the control series the wound was found to be weakest on the 4th and 5th postoperative days when 31 to 35 pounds pull was necessary to disrupt the wound. In the heparinized series the wound was weakest on the 3rd postoperative day and only 14 pounds pressure was required to disrupt the wound. This contrasts with the 45 pounds required on the third day to disrupt the wounds of control animals. After the 5th day both series became equal so it was concluded that heparin had no effect on the healing powers of an abdominal wall incision (in dogs) beyond the fifth postoperative day.

J. R. LACROIX

Tidal Drainage and Cystometry in the Treatment of Sepsis Associated with Spinal Cord Injuries. Munro, D.: *New Eng. J. Med.*, 1943, **229:** 6.

Sepsis which originates from inadequate care either of the urinary bladder or of the skin of the back, or both, is the commonest cause of death and unnecessary disability in patients with spinal cord injuries. This paper deals with the genito-urinary aspect of the problem, presenting experiences with 165 patients. Several practical types of tidal-drainage apparatus are described. Tidal drainage was not needed in 27 of 165 patients with all types and levels of spinal cord injury. Tidal drainage was needed but was not used in 37 of these 165 patients. Ten died within 48 hours of the receipt of the injury. Twelve of the remaining 27 had major sepsis at the time of their death or discharge—an incidence of 44%. Tidal drainage was needed and used in 101 patients. In the group that survived more than 48 hours the incidence of sepsis was only 13%. If there is destruction of sacral segments or roots the bladder is useless and it may be necessary to consider eventual transplantation of the ureters to the outside and the permanent use of urinals. If the patient has a transected cord and the mass reflex is not too active, he should expect to be able to lead an active and practically unrestricted wheel-chair life. He should expect to be free of the tidal drainage apparatus except at night. He must learn to take down, clean, sterilize, and set up the apparatus, as well as to fix an indwelling catheter in place in a sterile manner. He will have a bacteriuria but should not have either clinical cystitis or pyelitis. If the mass reflex is active, tidal drainage will not function sufficiently well to permit such a patient to live outside of an institution, at present. All other patients with non-fatal spinal cord injuries should expect to have completely normal genito-urinary tract with sterile urine at the time of their discharge from institutional care.

FRANK TURNBULL

"Frozen" Shoulder; Periarthritis; Bicipital Tenosynovitis. Lippmann, R. K.: *Arch. Surg.*, 1943, **47:** 283.

The present study is concerned with evidence in support of the contention that the basic lesion in so-called periarthritis or "frozen shoulder" is bicipital tenosynovitis. To determine whether tenosynovitis of the long biceps tendon was actually present in so-called "periarthritis" it was considered justifiable to subject a number of typical patients to surgical exploration. The operative procedure was standardized and was carefully carried out, so that no important structures of the periphery of the joint could be neglected. In the 12 patients operated on, each showed this lesion to be present and that no other pathological lesion of the periarticular structures was consistently present. The author concluded that bicipital tenosynovitis is the pathological basis of periarthritis in at least the majority of instances.

Further studies of the result of these surgical explorations indicate that in typical cases the tenosynovitis is adhesive and results in firm fusion of the tendon with the structures of the bicipital groove.

When fusion becomes solid, inflammation subsides. Clinical improvement commences as soon as the tendon is firmly fused to the humerus.

Lippmann discusses the mechanism by which adhesive tenosynovitis produces a frozen shoulder. He states that his studies have cast no light on the basic cause of the condition or on the reason for its frequent concomitance with cardiac and pulmonary disease. He describes a surgical procedure for the radical treatment of the condition when rapid cure is desired.

G. E. LEARMONTH

Significance of the Extent of Axillary Metastases in Carcinoma of the Female Breast. "Signification de l'extension des métastases axillaires dans le cancer du sein." Warren, S. and Tompkins, V. N.: *Surg., Gyn. & Obst.*, 1943, **76:** 327.

Le facteur déterminant de la survivance des patients après une opération du cancer du sein est la présence ou l'absence de métastases des ganglions lymphatiques axillaires. Or il n'est pas toujours cliniquement possible de préciser le nombre de ceux qui sont atteints bien qu'il soit essentiel que des foyers cancéreux ne demeurent point en place après l'intervention du chirurgien.

Les auteurs, analysent 171 cas et présentent une méthode d'exploration qu'ils ont appliqués à des sujets ayant subi une amputation radicale du sein et des ganglions lymphatiques axillaires.

Après des études histologiques minutieuses, ils ont classé leurs 171 patients en 4 groupes: *sans* métastases des ganglions lymphatiques axillaires, avec métastases enveloppant *moins* de la moitié des ganglions lymphatiques, avec métastases enveloppant *plus* de la moitié des ganglions lymphatiques, et avec métastases enveloppant *tous* les glanglions lymphatiques.

Du point de vue thérapeutique, la constation la plus intéressante est que la guérison, sur la base de "5 ans sans récidive" ou davantage, pour des cas contrôlés, est en proportion inverse de l'extension des ganglions axillaires. Le durée de survivance post-opératoire est également en relation avec l'envahissement des ganglions axillaires.

Les différents types d'affections cancéreuses du sein sont ensuite étudiés.

A la lumière de ces examens, les auteurs concluent en disant que la technique chirurgicale devra s'inspirer des conclusions qu'ils comportent. PIERRE SMITH

Primary Intracranial Lymphosarcoma. Abbott, K. H. and Adson, A. W.: *Arch. Surg.*, 1943, **42:** 147.

As far as the authors have been able to determine, the skull and intracranial dura mater have not been indicated as the primary site of origin of lymphosarcoma. They report two cases in which the primary focus appears to have been in the intracranial dura mater or possibly in the overlying cranial bone.

The problems of the origin of these tumours either in the dura mater over the dorsolateral surface of the brain or in its contiguous overlying cranial bone is discussed by Abbott and Adson. It was admitted that the latter as the primary site of origin could not be ruled out; the tumours may well have arisen in the bony diploë of the skull. The authors have made an extensive review of the literature pertaining to lymphosarcoma. G. E. LEARMONTH

Ceiling of Utilization of Nitrogen. Elman, R. *et al.*: *Arch. Surg.*, 1943, **47:** 216.

The correction of protein deficiencies of nutritional origin is a serious quantitative problem whenever the depletion is so severe as to require a large amount of protein alimentation. If but a short time is available for correction, the difficulties are multiplied. In many cases the parenteral route must be used. The purpose of the authors' study was to determine, if possible, the ceiling of utilization of intravenously-given amino acids and polypeptides, *i.e.*, how rapidly protein depletions can be corrected. In the St. Louis City Hospital, as much as 300 grm. of hydrolyzed casein daily for three days has been so administered to two patients without difficulty.

In the experimental methods, mongrel dogs were depleted according to the method previously described by Elman *et al.* in 1942, by putting them on an almost nitrogen-free diet containing a mixture of corn syrup, Ringer's solution and a vitamin B complex concentrate. Elman and his associates conclude that positive nitrogen balance as well as regeneration of serum albumin, was demonstrated in protein-depleted dogs, when 1.75 grm. of nitrogen per day was given for two days by means of a continuous venoclysis, an enzymic hydrolyrate of casein containing a mixture of amino acids and polypeptides being used as the sole source of nitrogen.

G. E. LEARMONTH

Carcinoid Tumours (so-called) of the Ileum. Dockerty, M. B. and Ashburn, F. S.: *Arch. Surg.*, 1943, **47:** 221.

The relatively common appendical carcinoid tumour has been superseded in point of interest by a small group localized elsewhere in the gastrointestinal tract, notably in the ileum, whereas appendical carcinoid tumours are often symptomless; those involving the ileum produce clinical evidence of obstruction in about one-third of the cases and small tumours thus located may produce major disturbances. About 25% of ileal carcinoid tumours appear as multiple tumour nodules. The authors' main concern was an enquiry into the malignant propensities of these tumours. They reviewed the records and pathological specimens of 130 carcinomas of the small intestine at the Mayo Clinic between the years 1906 and 1943. Thirty so-called carcinoid tumours were encountered. Thirteen had metastasized locally or distantly. The neoplasms tended to be present in the terminal segments of the ileum as small orange submucosal nodules with minimal ulceration. Evidence was afforded that all carcinoid tumours are in essence peculiar low-grade adenocarcinomas. G. E. LEARMONTH

Obstetrics and Gynæcology

Observations on the Elderly Primigravida. Erwing, H. W. and Power, H. A.: *Am. J. Obst. & Gyn.*, 1943, **46:** 395.

A series of 199 elderly primigravidas delivered over a five-year period at a teaching maternity hospital is recorded. This group comprises 1.32% of total deliveries. There was no maternal mortality, a gross fetal mortality of 9.5%, and a corrected fetal mortality of 2.7%.

The elderly primigravida 35 years of age or over, is more subject to loss of the fetus at 5 to 7 months, premature labour, degenerative diseases, early or late toxæmias of pregnancy, inertia during labour, third-degree lacerations. With these complications in mind, more careful attention is needed to continue the pregnancy and more elective obstetrical procedures may be needed at term to effect delivery. It is important, if operative interference is deemed necessary, that it be instituted as early in labour as feasible before the ideal time as regards the safety of mother and infant has passed. Individualization of patients is an absolute necessity. ROSS MITCHELL

Caudal Anæsthesia in One Hundred and Sixty Obstetrical Cases. Parrett, V.: *Am. J. Obst. & Gyn.*, 1943, **46:** 417.

Certain complications are discussed, including possible peripheral nerve damage, pain in the lower extremity, tenderness over sacrum, and respiratory failure. There is an increase in the incidence of operative deliveries, including manual and forceps rotation for occiput posterior positions. The incidence of the latter was more than twice that of the same condition in previous months.

The procedure should be adopted with due regard for the above factors, realizing that it is no sub-

stitute for good obstetrical management. For these and other reasons it is suggested that adoption of the plan by hospital staffs be preceded by intelligent planning and liaison between members of obstetrical and anæsthetic sections. ROSS MITCHELL

Total Abdominal Hysterectomy. "Hystérectomie totale abdominale." Foss, H. L. et Babcock, J. R.: *Surg., Gyn. & Obst.*, 1943, **76:** 214.

L'hystérectomie totale comporte de tels risques qu'elle ne saurait devenir une opération de routine. Meigs prétend qu'ainsi pratiquée, elle entraînerait plus de morts que ne le feraient les cancers eux-mêmes. Elle est tout au moins déconseillée aux chirurgiens qui n'ont pas un grand entraînement, c'est-à-dire qui ne pratiquent pas au moins 6 ou 8 hystérectomies par an.

Masson et Von Graff, soulignent le fait que le processus de dévelopement du cancer du cervix continu souvent après qu'une sub-totale ait été pratiquée et Farrar prétend même qu'il s'intensifie sous l'action des hormones.

Les auteurs examine la morbidité et la mortalité inhérentes à l'hystérectomie totale, d'après les rapports de plusieurs auteurs. Il procède ensuite à un exposé technique très détaillé de l'opération avec illustrations nombreuses. Un tableau des instruments requis l'accompagne.

Le chirurgien qui pratique une hystérectomie totale doit avoir présent à l'esprit deux dangers possibles qui peuvent gravement compromettre le résultat de l'opération: il doit éviter de nuire à l'uretère, notamment quand il suture les grands ligaments et ferme le péritoine; il doit éviter de piquer l'intestin par inadvertence quand il suture le fond du vagin s'il ne veut pas provoquer une fistule vésico-vaginale. PIERRE SMITH

The Prognostic Significance of Rise in Temperature in the Course of Radium Treatment of Cancer of the Cervix. Goldscheider, G.: *J. Obst. & Gyn. Brit. Emp.*, 1943, **50:** 202.

The rise in temperature is more frequent in patients in the more advanced stages of the illness (due no doubt in part at least to lowered resistance of the patient and local necrosis of the growth), nevertheless it is of interest to note that more than half of our patients with advanced carcinoma did not show any rise in temperature. Therefore, we must seek to avoid this unfavourable complication, and by so doing we shall have advanced considerably in treatment. The routine study of the leucocyte count has shown that a leucocytosis, which may either precede or quickly follow the rise in temperature is a very frequent occurrence in these pyrexial cases. Held and Shiraki stress the fact that they never found any leucocytosis. In contrast with their experience we not only find leucocytosis frequently in such cases but also consider the presence of leucocytosis of sufficiently grave significance to justify postponement of radium application until a normal white cell count has been restored. By this procedure we believe that we can lessen the incidence of pyrexia during treatment and convalescence.

From the group of patients who show a rise of temperature during treatment the total number of deaths in course of treatment is estimated. The persistence of pyrexia results in an increase of the immediate mortality-rate. The 5-year survival-rate of patients showing pyrexia during or immediately after a full course of treatments is lower than that of the remaining patients in the small series of cases here studied. P. J. KEARNS

Prolapse Following Hysterectomy. Hamilton, J.: *J. Obst. & Gyn. Brit. Emp.*, 1943, **50:** 184.

Five cases of prolapse following hysterectomy have been seen within the space of 2 months. Three of these cases followed a subtotal hysterectomy, which corresponds with the larger number following subtotal hysterectomy noted in the literature. A mechanical reason is advanced for the greater frequency of prolapse following subtotal hysterectomy. Total hysterectomy with reconstruction of the cardinal ligaments by side to side closure of the vagina is suggested as a method least likely to be followed by prolapse. Almost complete obliteration of the vagina is necessary for a satisfactory result in the treatment of the condition. P. J. KEARNS

Pædiatrics

Sudden Death in Infants Due to Pneumonia. Adams, J. M.: *J. Pæd.*, 1943, **23:** 189.

Sudden death is not very uncommon in infants who are apparently healthy. In very young infants, a fatal infection may run its course without producing noteworthy symptoms, even without fever. Although little emphasis is accorded to pneumonia, careful pathological and bacteriological studies have shown this to be the cause of sudden death in the majority of cases analyzed. Brief accounts of three cases of sudden death in young infants resulting from pneumonia are presented by the author to emphasize this relationship. At necropsy there was evidence of widespread congestion of the lung with diffuse hæmorrhage and scattered areas of mononuclear infiltration. This picture closely resembles that seen in fatal cases of virus pneumonitis. The absence of bacteria and the poor polymorphonuclear leucocyte response in these cases further suggest a virus etiology. S. J. USHER

Meningococcæmia. Silverthorne, N.: *J. Pæd.*, 1943, **23:** 155.

Three cases of meningococcæmia without meningitis are reported. None of the children received any chemotherapeutic agent or specific serum, and all three recovered. Blood bactericidal studies showed that bactericidal power developed in the blood of each patient to his infecting strain of meningococcus during the course of his illness. This report furnishes evidence, first, that certain patients with meningococcæmia do recover without drug or serum treatment and, second, that bactericidal power develops in their blood. The author points out that these factors must be considered in the compilation of case fatality rates based on results obtained with different forms of treatment. S. J. USHER

The Significance of the Widal Reaction in Enteric Diseases of Children. Greenberg, M.: *J. Pæd.*, 1943, **23:** 150.

The diagnosis of typhoid or paratyphoid fever on the basis of a positive Widal test is not justifiable. Such a positive test may be the result of an infection with another member of the Salmonella group. Brief accounts of four cases are presented by the author to emphasize this. To make a definite diagnosis of typhoid fever, bacteriological evidence is necessary. In the first week of the illness this is frequently obtained from blood cultures: in later weeks, from cultures of stool specimens. It is important to differentiate between typhoid and paratyphoid fevers and the fevers caused by the other Salmonella organisms. Clinically, the former are more serious and have higher mortalities. Carriers of typhoid and paratyphoid occur in from 5 to 10% of all cases. On the other hand, infections with the so-called food poisoning Salmonella organisms are usually short-lived and chronic carriers of the organisms are uncommon. S. J. USHER

Oto-Rhino-Laryngology

Deafness in Infancy and Early Childhood. Ewing, I. R.: *J. Laryn. & Otol.*, 1943, **58:** 137.

An analysis of 30 unselected deaf children referred by medical men for treatment is presented. The age of the group was from 12 months up, 20 being under three years. Eleven were totally deaf to all hearing

tests, the remainder having small islands of hearing only. All except two showed normal reactions and normal use of play materials. Voices recorded on records showed changes in rhythm, loudness and pitch identical with those of normal children. Only after reaching 18 months of age did the deaf child lose interest in voice when left alone. Gestures began at that age to take the place of speech unless special training was provided. If this change over to gestures is not prevented the child loses interest in voice, and the quality of the normal voice cannot be recovered by any known methods of training. If under special training and home care the child finds that his voice is more effective in satisfying his wants than gestures he will continue to use it and keep the normal resonance. No artificial vibratory stimuli were given to any child until it reached 3 years of age. In the treatment of these cases the endeavour was to give the child language, speech, and lip reading in that order and avoid signs. GUY H. FISK

The Nature of Deaf Mutism in Childhood and Adolescence. Ewing, A. W. G.: *J. Laryn. & Otol.*, 1943, **58:** 143.

General surveys have shown apparent backwardness amongst older deaf children. Careful examination of these statistics shows that those children having special educational facilities, deaf hearing aids and a proper home environment were no more backward than normal children. The cause of the apparent backwardness is the lack of normal contacts amongst the deaf children. Parents who use gestures and talk down to a deaf mute do not help him. While certain allowances may have to be made, these should be kept to a minimum and the attempt made to provide as normal an atmosphere as possible. In 13 unselected deaf mutes this procedure gave a satisfactory result in the improved abilities of the child, three of whom were able to attend college, two to attend normal high schools, and one to run a comptometer in an office. GUY H. FISK

Radiology and Physiotherapy

The Control of Diagnostic Quality in Roentgenograms of the Chest. Morgan, R. H.: *Am. J. Roentgenol. & Rad. Ther.*, 1943, **50:** 1943.

The control of roentgenographic quality in roentgenograms of the chest involves two principal problems: (*a*) the regulation of exposure, and (*b*) the control of the process of developing. Adequate regulation of exposure may be obtained through the use of recently developed roentgenographic exposure meters. Adequate control of the process of developing can only be expected when the time-temperature method is employed. When roentgenographic quality is controlled by these means chest roentgenograms of excellent uniformity and quality may be obtained routinely. C. C. MACKLIN

The Lateral View in the Roentgenological Diagnosis of Lesions of the Colon. Wissing, E. G. and Lowman, R. M.: *New Eng. J. Med.*, 1943, **229:** 207.

Many colonic lesions, especially those in an early stage, are overlooked by the roentgenologist, and this has led to a pessimistic attitude in regard to the possibility of cure by surgical measures. Many early lesions may be successfully visualized by x-rays taken in the lateral position, when they are completely missed in routine antero-posterior views. The double-contrast enema is another valuable diagnostic measure stressed by the authors, and particular emphasis is placed on the proper preparation of the patient before roentgenological study is undertaken.

The routine employed starts with 60 c.c. of castor oil given on the day prior to examination, and followed by a high cleansing enema in the evening, which is repeated the following morning. The patient is then taken to the fluoroscopy room, placed in the supine position and the enema allowed to run slowly into the rectum. Fluoroscopy is carried out while the barium is running in, the patient being repeatedly rotated to the right- and left-oblique positions, the right anterior oblique position being especially valuable for visualization of the recto-sigmoid junction. Any suspicious area is immediately x-rayed by means of a spot-film device. The entire colon is then filled to the cæcum and postero-anterior and lateral films taken on the Bucky table.

The patient is again fluoroscoped after the enema is expelled, and the remaining barium coats the colonic mucosa and postero-anterior and lateral x-rays are repeated. If the diagnosis is still doubtful the double-contrast enema is resorted to, that is, the colon is slightly inflated with air while still lined with barium and further x-rays are taken, the entire procedure being controlled by fluoroscopy. NORMAN S. SKINNER

Pathology and Experimental Medicine

Hyperthyroidism of the Juvenile, Familial Type. Eckes, W. P., Glasser, S. T. and Mersheimer, W. L.: *Am. J. Surg.*, 1943, **61:** 291.

In a family of five girls, three had typical hyperthyroidism, a fourth showed a benign goitre, while the fifth had rheumatic heart disease. A cousin of these girls also had hyperthyroidism.

MADGE THURLOW MACKLIN

Testicular Tubular Adenoma in Two Sisters. Novak, J.: *Am. J. Obst. & Gyn.*, 1943, **45:** 856.

Two sisters, aged 27 and 26, who had never menstruated, were operated upon, and the gonads removed. In each instance, this was followed by hot flushes, typical of withdrawal of ovarian hormone. Pathological examination revealed that the gonads in both sisters were examples of testicular tubular adenoma. The grandmother and mother of these girls, as well as others of their female relatives showed sexual abnormalities of a type not stated. MADGE THURLOW MACKLIN

A Rheumatic Family. Pickles, W. N.: *The Lancet*, 1943, **2:** 241.

In view of the recent findings of Wilson and Sweitzer that rheumatic fever is an hereditary disease, dependent upon a single recessive gene, the family recorded by Pickles is of interest. The family was located in a small area, from which they had apparently not migrated. It is thus probable that there was a great deal of intermarriage in this family, explaining the high incidence of the disease, although due to a recessive factor.

The family consisted of 5 generations, with the man in the first generation a victim of rheumatic fever. He had 4 sons and 2 daughters. One son, normal, had an affected daughter. A second son was affected, as was one of his 2 sons. A third son, normal, had an affected daughter. A fourth son, normal, had 6 children of whom 5 were affected, and 28 grandchildren of whom 8 were affected with rheumatic fever. The two daughters in the second generation were normal, but one had an affected son, the other 2 affected daughters, 2 affected grandchildren and one affected great grandchild. There were 55 persons in the direct line of descent in this family, of whom 24 had rheumatic fever. The author had examined 20 of these 24 himself. Such a family tree strongly supports the idea of heredity as the chief causative factor in rheumatic fever.

MADGE THURLOW MACKLIN

Polydactylism in Related New England Families. Odiorne, J. M.: *J. Heredity*, 1943, **34:** 45.

This extensive record concerns the occurrence of extra fingers and toes in six different New England families. When the investigation was complete, it was discovered that all of the polydactylous persons are descendants of an English settler who arrived in New England before 1644. They are therefore listed in one pedigree, in-

volving ten generations, including 90 polydactylous persons living in widely separated parts of North America.

The condition may affect one or both hands, one or both feet, or any combination of hands and feet. Gradations in severity occur, ranging all the way from a mere fleshy appendage next to the little finger to a fully formed digit. In some instances children born of normal parents were polydactylous. This is interpreted as being due to the fact that although the gene for the condition is dominant in its transmission, its expression may be modified so profoundly as to be suppressed in some persons, who nevertheless possess the gene for extra digits. They thus may pass this gene on to their offspring who may exhibit it.

MADGE THURLOW MACKLIN

Anæsthesia

The "All Out" Anæsthetic Agent for General Anæsthesia in Armed Forces and Civilian Defense. Flagg, P. J.: Editorial in *Surg., Gyn. & Obst.*, 1943, **77:** 437.

Teachers of anæsthesia have taken the position that a routine agent and method of administration of anæsthetics should be discouraged; that the anæsthetic agent and the method should be suited to the case. This is true but the policy entirely overlooks two important factors upon which subsequent mortality and morbidity depend (*a*) *the judgment required for selection*—as in other fields this cannot be taught but is acquired through well balanced experience; and (*b*) *the technical skill necessary to make the judgment effective*—technical skill comes slowly; for some it is impossible, it is a physical qualification which many do not possess.

The purpose of an anæsthetic administration is to enable the surgeon to operate with safety and convenience and that the patient may have an uncomplicated recovery. These factors should not be jeopardized by the use of some new anæsthetic administered by a man who has spent but a few months learning a list of new anæsthetic agents and techniques which he is to employ with what skill he can muster under conditions found at the moment. Casualties should not be looked upon as opportunities for the scientific education of the personnel administering the anæsthetics when the safe evacuation of the wounded with the factors contributing to this end—the anæsthetic, asepsis, and the intravenous therapy, should be the surgeon's first and last concern in requesting the anæsthetic to be used.

An alternative to this is to use a well considered routine which has been found to be safe and effective, is under control, and is accompanied by few regrets. The agent should be capable of safe administration for the performance of surgery on the extremities, the abdomen, head and neck, and also of plastic surgery. It should be capable of administration by improvised means and by simple portable apparatus. It should be easily available, and not subject to explosion. It is obvious that cyclopropane, ethylene, ethyl chloride, chloroform, nitrous oxide and oxygen, the intravenous barbiturates—evipal, pentothal sodium—and avertin, also that regional block, caudal or spinal anæsthesia cannot meet all these requirements.

The author is convinced that ether is the one agent that possesses the most qualifications of a routine anæsthetic agent. There have been objections to its use, but it is most unfortunate that equally well known and accepted methods of meeting these objections have been generally ignored. Instead new agents are continually being introduced, but with accumulating morbidity and mortality percentages, the use of the newcomer declines and is gradually eliminated and another aspirant promptly takes its place.

Difficulty of administration is technical. The modern product is absolutely pure and safe for use. Ether and air occasionally burn but explosions are rare. Intravenous therapy, now almost routine, eliminates dehydration, hæmoconcentration, and glycogen loss. Anoxæmia is no longer tolerated. Salivation is controlled by preoperative medication. Postoperative pulmonary complications always have been due to aspiration of secretions and to anoxia. Postoperative nausea is caused in 90% of cases by anoxia and in 10% by the odour of the ether.

The apparatus required for its use is simple. A cone mask, a pocket flashlight laryngoscope, an endotracheal tube and pharyngeal airway is all that is necessary to carry out every type of war or civilian surgery safely, effectively and with minimum mortality and morbidity. The addition of a simple inhaler, nitrous oxide gas and oxygen, and a mechanical suction apparatus makes for luxuries which will not only render control easier but will likewise reduce the morbidity.

This policy while it does not make for glamour in the field of anæsthesiology, will, nevertheless, result in immeasurable improvement in results of anæsthetic administrations by hastily trained personnel, a condition of affairs forced upon us by war circumstances.

F. ARTHUR H. WILKINSON

Hygiene and Public Health

Ideal Weights for Men. *Statistical Bull.*, Metropolitan Life Insurance Company, 1943, **24:** 6.

The ordinary height-weight tables have been based on average weights and usually show a progressive increase in weight with advancing age. Evidence is now accumulating that this average increase in weight is undesirable from the standpoint of health and longevity. From insurance company records tables giving best weights rather than average weights can be constructed. These tables now assume that weight is stationary after maturity.

The point is of considerable practical importance, for overweight is the most common cause of restriction of insurable risk. The reason for this is that insurance companies have had a bad experience with overweight policy holders despite the fact that they have been selected with considerable care. Men, who are 20% overweight show a mortality 1/3 higher than the average; those 30% overweight show a mortality 50% higher than average; and those 50% overweight have a mortality nearly double that of the average. The excess mortality is due to many causes. Disease of the heart, kidneys and blood vessels are more apt to occur among the obese, but diabetes exacts the greatest penalty. The death rate from diabetes among men 25% or more overweight is 8 times that of average weight men. The following table gives "Ideal" weights for men ages 25 and over.

Height (with shoes)		WEIGHT IN POUNDS *(as ordinarily dressed)*		
feet	*inches*	*Small frame*	*Medium frame*	*Large frame*
5	2	116-125	124-133	131-142
5	3	119-128	127-136	133-144
5	4	122-132	130-140	137-149
5	5	126-136	134-144	141-153
5	6	129-139	137-147	145-157
5	7	133-143	141-151	149-162
5	8	136-147	145-156	153-166
5	9	140-151	149-160	157-170
5	10	144-155	153-164	161-175
5	11	148-159	157-168	165-180
6	0	152-164	161-173	169-185
6	1	157-169	166-178	174-190
6	2	163-175	171-184	179-196
6	3	168-180	176-189	184-202

FRANK G. PEDLEY

Sulfadiazine Prophylaxis in an Epidemic of Scarlet Fever. Watson, R. F., Schwentker, F. F., Fetherston, J. E. and Rothbard, S.: *J. Am. M. Ass.*, 1943, **122:** 730.

Sulfadiazine was used in the control of scarlet fever at a United States naval station. The personnel,

which numbered several thousand, was divided into 2 groups: (1) students in a radio school and (2) transients.

During the first two weeks of November scarlet fever cases began to occur frequently in both groups and by the middle of the month had reached epidemic proportions. Although the two groups of personnel were separated throat cultures revealed the same type of hæmolytic streptococcus (Group A type 19). Since some success had been reported in the control of rheumatic fever by the use of sulfa drugs their use were considered worth a trial in scarlet fever. On November 20 the administration of sulfadiazine was commenced on the entire personnel of the radio school; 0.5 grm. was given twice a day for a period of 32 days. A dramatic drop in the incidence of scarlet fever occurred almost immediately. During this time cases of scarlet fever continued to occur in even greater numbers than before among the transient group. Accordingly on December 12 this group was started on 1 gram of sulfadiazine daily and this was continued for 12 days. An even more marked drop in incidence occurred than in the case of the radio group.

Two other findings in this study are of interest. (1) After the administration of sulfadiazine had ceased no new cases of scarlet fever occurred. This was an unexpected result, particularly as throat cultures continued to show that about 10% of individuals were carriers of group A streptococci. (2) During the period of administration of the sulfadiazine the number of sick calls for respiratory complaints dropped quite definitely, but tended to rise again after the drug was discontinued. Sick calls for non-respiratory complaints continued at a fairly uniform level.

FRANK G. PEDLEY

Murine Typhus Fever Control. Eskey, C. R.: *Pub. Health Reports*, 1943, **58:** 631.

In the ten year period 1932 to 1941 20,000 cases of murine typhus fever (endemic typhus) were reported in the United States. The author believes the actual number to be many times the recorded figure and in some southern localities he thinks the disease may actually be a serious problem not far removed from malaria in extent.

Most cases of murine typhus are traceable to typhus-infected rats. Control of the disease is based, therefore, on rat control and this is by no means an easy task. The conventional methods of rat extermination, traps, poison and fumigation, are effective when applied energetically, but the trouble with rat campaigns is that most of them are of short duration. They fail to eradicate all the rats and when they are over the rats multiply and soon become a pest again.

The author describes methods of rat-proofing buildings and suggests the essential points in legislation directed towards the control of murine typhus.

FRANK G. PEDLEY

The progressive quickening of the social conscience is an outstanding feature of this century, and it has found expression in the humanizing of industry and in a body of social effort without precedent and a body of legislation to improve the health and welfare of the people. But if we pause to inquire whether the achievements of social reform between the last war and this, as judged by the removal of social inequalities and the establishment of social justice, were effective, our answer would have to be in the negative.—Viscount Dawson of Penn, *Brit. M. J.*, October 2, 1943.

Obituaries

Major Frederick Adams, M.D., died suddenly at London, Ont., on October 31, in his 60th year.

Dr. Adams was examiner in public health on the main board of the Medical Council of Canada for two years, and had been M.O.H. at Windsor. He was M.B. Toronto (1904). He was on military service both in the last war and in the present one, and had a fine record of work well done. He leaves a widow and two sons.

Dr. Stephen A. Adlington, retired physician, died on October 31, at his home in suburban Bedford. The son of Dr. and Mrs. Robert Adlington, of Derbyshire, England, he was born in Edinburgh and spent his early years in England.

Dr. John Wilson Elliott Brown, one-time superintendent of the Toronto General Hospital and Medical Health Officer in the Yukon during the gold rush of '98, died on October 27, at the Toronto General Hospital. For many years he practised medicine in Toronto, with offices on Bloor Street West, and initiated the formation of the Canadian Hospital Association and the Ex-House Officers' Association. He was also a former superintendent of the Ford Hospital, Detroit.

Born in Oxford County, Dr. Brown attended St. Mary's Collegiate Institute and taught for several years in Middlesex County. He graduated from the University of Toronto with the degrees of Bachelor of Medicine in 1892 and was the silver medallist of his class. The next year he served as house surgeon at the Toronto General Hospital. For a time he served on the staff of St. Michael's Hospital, during which period he was secretary for various medical societies.

In 1898 he was invited by the late Hon. James Sutherland to join the first Government party going into the Yukon. While in the Yukon Dr. Brown held the offices of Territorial Secretary and Medical Health Officer.

In July, 1905, he was appointed superintendent of the old Toronto General Hospital and during his administration was active in reorganizing the institution. He visited many large cities in Great Britain, Continental Europe and the United States in connection with the reorganization of the hospital, collecting information regarding up-to-date construction. From 1912 to 1917 Dr. Brown was superintendent of the Ford Hospital at Detroit.

Returning to Toronto, he engaged in private practice and for a number of years was consultant for the Aged Women's Home and the Aged Men's Home, Belmont Street. He was also secretary of the American Hospital Association and corresponding secretary of the British Hospital Association.

For a few years Dr. Brown was on the staff of the *Canadian Medical Association Journal* and was the author of numerous articles on medical and hospital subjects and pamphlets, which included among others, "Oliver Goldsmith and His Medical Age" and "The Life and Times of Oliver Wendell Holmes". Prominent member of the Sourdoughs, Dr. Brown was president for some years. In later years he had resided at 1178 Mount Pleasant Road.

While in the Yukon, he married Faith Freeman, known by her pen name "Faith Fenton", a pioneer woman journalist, who was Yukon correspondent for the *Toronto Globe*, and who died in 1936. He was married in 1937 to Olive Elizabeth Freeman, who survives him. Also surviving are three sisters and a brother.

Dr. John Garvey Mickler, brilliant young University of Toronto graduate in 1942 and gold medallist of his class, died on October 20, at St. Michael's Hospital after a brief illness. He was 26 years old. Medical director of the Ciba Pharmaceutical Company

of Canada at Montreal since August, he was spending the week-end with his parents, Mr. and Mrs. George J. Mickler, 41 Tyndall Avenue, when he was stricken. Dr. Mickler was born in Toronto and was a graduate of St. Michael's College, where he was a scholarship winner. During his first year in the Faculty of Medicine, University of Toronto, he won the Baptie Scholarship. On completing the course in 1942 he was awarded the gold medal for the highest honours of the entire course and was elected to membership in the Alpha Omega Alpha medical fraternity. Completing his internship in St. Michael's Hospital, he was appointed pathologist at St. Joseph's Hospital, where he served one term prior to becoming medical director of the Ciba Company.

Dr. Mickler was an ardent golfer and was former captain of the intercollegiate golf team. He was also secretary of the Canadian Interns' Board. He was an active member of Holy Family Catholic Parish and had served with the Sanctuary Society. Surviving besides his parents is a sister.

Dr. Daniel Sayre MacKay died in the Winnipeg General Hospital on October 27. Born in 1878 at Reserve Mines, Cape Breton, he was educated at the famed Pictou Academy, then, choosing his father's profession, he graduated from McGill Medical School in 1901. This was followed by postgraduate work in Edinburgh, London and Liverpool under such men as Sir William Mitchell Banks and Dr. Thomas Grimsdale.

Coming to Winnipeg in 1909, he was appointed surgeon to the Children's Hospital. In 1911 he became associate gynæcologist at the Winnipeg General Hospital; in 1913 he received his first university appointment as demonstrator in gynæcology, and rose steadily, until in 1926 he was appointed Professor of Obstetrics and Gynæcology and Head of the Department. In 1934 he was elected a Foundation Fellow of the Royal College of Obstetricians and Gynæcologists. In 1939 he resigned his teaching position and was appointed Professor Emeritus and a member of the Honorary Consulting Staff of the Winnipeg General Hospital.

Thus Minerva claimed him as a devotee, but he also worshipped at the shrine of Mars. From the age of fourteen when he joined the 17th Field Battery at Sydney, N.S., his active interest in Canada's military forces never ceased. On the very eve of his death he attended a reunion of the 196th (Western Universities) Battalion, which he organized and commanded in the last war. When the Queen's Own Cameron Highlanders of Winnipeg were organized in 1910 he transferred from the Army Medical Corps and in the next year commanded the special company at the coronation of King George V. When the war of 1914-18 broke out he joined the 27th Battalion on its organization, served as second in command in Belgium and France; then, in succession, commanded the 196th Battalion, the 19th Reserve Battalion and the Young Soldiers' Battalion. The opening of the second great war found Col. MacKay in command of the 7th Infantry Brigade reserve from which he retired in May, 1942.

For a number of years he served with distinction as acting provincial commissioner of the St. John's Ambulance Brigade.

As befitted one sprung from Highland stock Dan MacKay was intensely faithful to his loyalties, positive, forthright and full of generous impulses. John Bunyan would have called him Valiant-for-truth, for he was always quick to defend his principles even against odds. He was filled with the zest of life and had the keenest interest in the welfare of young men, whether among soldiers or students. From the latter he earned the honour of the nickname, "Dugout Dan".

His wife, who was chairman of the Billeting Committee of the 1930 Winnipeg meeting of the British Medical Association, predeceased him, but he is survived by his only son.

As teacher, soldier and public citizen, D. S. MacKay left a distinct impress on the life of Western Canada.

Dr. Maurice Powers, head of the R.C.M.P. crime detection laboratory, Regina, was killed while flying in a R.C.A.F. plane on the night of October 19. He was 38 years old.

Born at Rockland, Ontario, the son of Dr. and Mrs. Martin Powers, he early in life decided to combine the profession of medicine with crime investigation and, though only thirty-eight, had achieved an international reputation for himself because of his work.

Dr. Powers studied at Ottawa University and McGill (M.D., 1934) and then spent three years in New York with the medical examiner at the city morgue, and with the New York Police Department.

In August, 1937, he was appointed to the Royal Canadian Mounted Police at Ottawa and shortly afterwards was transferred to Regina, to establish a crime detection laboratory. His department has grown from a one-room affair to a modern scientific laboratory employing the finest and the latest equipment, and a large staff of experts.

Dr. Powers' work took him over the Dominion, but chiefly in the West, collecting scientific exhibits, and giving evidence. One branch of his work was the instructing of policemen in the science of handling bits of evidence which they would come across in their own work.

He was recognized, not only for his work but also for the splendid type of man which he was. He was a great sport—having been a well known hockey player in his university days. He was also in demand as a public speaker and took great delight in showing his exhibits in past cases, and telling of his work.

Surviving are his widow and two children, living in Regina; his parents and a brother.

Dr. Clarence Victor Pratt, a medical practitioner in West Toronto for the last 24 years, died on November 6, in his 55th year, at his home, following a prolonged illness. Dr. Pratt has been a member of the associate staff of St. Joseph's Hospital since the inception of that institution. Born in Cobourg in 1888, where he received his early education, Dr. Pratt graduated from the Ontario College of Pharmacy in 1911 and from the University of Toronto in medicine (1918) and also from the College of Physicians and Surgeons in 1918.

After a brief practice in Gatineau, Que., Dr. Pratt came to Toronto, establishing a practice on Annette Street. He was a member of High Park United Church, the Liberal Organization, the Academy of Medicine and the Ontario Medical Association.

Surviving are his widow and two sons.

Dr. Alfred Harold Singleton, a pioneer physician and surgeon of Saskatchewan, widely known and greatly beloved, died at Regina following a brief illness on May 14, 1943.

Dr. Singleton was the son of John Henry Singleton, one of the leading dairymen of Ontario, and of Anna Rea, Almonte. He was born in 1880, at Singleton's Corners (now Crosby), Leeds County. After graduating at Queen's University in 1904 he took postgraduate work abroad. Upon his return to Canada, in 1905, he married Evelyn Dickson (Queen's, Arts '02), and in the same year took up residence at Rouleau, Saskatchewan.

Saskatchewan had been constituted a Province the year before. Conditions were still primitive, the population small and widely scattered. Dr. Singleton's friends questioned the wisdom of his resolve to join his fortunes with those of the young West. A harsh and rugged land, it demanded of its pioneers great resources of character and physical strength. Some, no doubt, felt that his great personal charm, his refinement and genius for friendship would be wasted in the vast isolation, but in the end these endowments of mind and heart proved to be among his richest gifts to his community. Unsparing of himself on the long and exhausting drives over prairie trails in all weathers, he identified himself

with the fortunes of all his people, high and low, poor and rich, and they loved him. In a land without regular highways, and still awaiting the vast tidal wave of immigration that was later to break over it, his unfailing companions were his compass to guide him when the stars failed, and a small copy of the *Meditations* of Marcus Aurelius. Forced to live within himself and with his books, his character assumed splendid strength, fearless and self-reliant, as befitted one so grandly gifted by nature with a commanding physique. He read avidly professional books and journals, history and biography, established his own hospital in 1925, now the Rouleau Community Hospital, served as Chairman of the School Board, became W.M. of the Masonic Lodge (1911), and in all ways was an outstanding citizen, but his greatest achievement was in the order, beauty and integrity of his own life.

The loss of his fifteen year old son, John, under tragic circumstances, profoundly affected Dr. Singleton's later years. His thinking changed radically, while his compassion for suffering humanity broadened and deepened.

Dr. Singleton was appointed Medical Officer, with the rank of Captain, at 120 C.A. (B) T.C., Regina, in 1941, and was associated with Headquarters Staff, M.D. No. 12, at the time of his death. Besides his widow he is survived by two daughters and one son, four brothers and two sisters.

Dr. Alfred Thompson Turner died suddenly on November 1, 1943, at the Kitchener-Waterloo Hospital, Kitchener, in his 57th year. He was a graduate of the University of Western Ontario (1913).

Dr. Peter James Wallace died suddenly on October 17 at his home at Covedell, N.B. Dr. Wallace was educated in the Chatham school, St. Francis Xavier University, and Dalhousie Medical School (M.D., 1905). He was born in 1877 at Chatham, and had practised at Covedell since 1905. Throughout the Mirimaichi district he had many friends and his loss will be keenly felt.

Dr. James Archibald Whillans, Medical Officer of Health for Swansea since its inception as a separate municipality in 1926, died on October 18, following a prolonged illness. He was 70 years old. He had served as a medical practitioner in Swansea for 33 years.

Born at Ilderton, Ont., Dr. Whillans received his early education in London, Ont., and graduated in medicine from the University of Toronto in 1907. Prior to opening a practice in Swansea he took postgraduate work in New York. He was active in the Masonic Order, a past master of Mimico Lodge, A.F. & A.M., and a member of Rameses Temple, Shriners. He was an elder in Morningside Presbyterian Church. A keen bowler and curler, he was a member of Morningside Bowling Club and High Park Curling Club.

Surviving are his widow, three sons and two daughters.

Mr. W. J. Ingram. We regret to record the death of Mr. Ingram, late President of Messrs. Ingram and Bell, the well-known physicians and hospital supply firm. Mr. Ingram formed the company with the late Mr. F. J. Bell in 1905 in Toronto and lived to see it grow to its present flourishing condition. He had been ill for some four years, but remained as Chairman of the Board of the Company. He also retained to the last a very keen interest in the activities of the Rotary Club Committee for the Care of Crippled Children.

Broadcasting musical programs in British war factories has been found very effective, provided there is not too much of it; three half-hour periods a day are said to be best.—*The Diplomate*, 1943, **15**: 267.

News Items

Alberta

The Dominion Government is building an extension to the University Hospital, Edmonton, to provide additional accommodation for men of the Armed Forces invalided home.

Taber has a new hospital, one which was badly needed, as formerly patients had to be taken to Lethbridge over 30 miles distant. A Taber physician then had to travel over 65 miles daily to visit his hospital patients.

Elections are being held in four medical districts for members of the Council of the College of Physicians and Surgeons, *viz.*, Nos. 1, 3, 5, and 7, for the two-year period of 1944-1945. The ballots this year will take the form of the Royal College of Surgeons of England, thus enabling the greatest secrecy as to who has cast any vote.

By order of the Council of the College of Physicians and Surgeons the districts have been rearranged, except those of the two larger cities of Calgary and Edmonton, so that there may be a more nearly equal number of voters in each district. This was necessitated by the shifting of the population from the drier areas and the consequent removal of the local physicians.

Owing to the rationing of liquors due to the war, much pressure is being put on the physicians by the public, to issue prescriptions for liquor, but to the credit of the members of the profession few physicians have given way. The Liquor Board has decided to take drastic action to prevent the question getting out of hand as was the case in some Provinces during prohibition years ago.

Dr. S. M. Schmaltz, of Lethbridge, was recently in a plane crash east of Winnipeg, but was able to attend to the other passengers who were slightly injured, so they could continue their journey.

As the recent medical graduates and the junior physicians are largely in the forces, it has fallen to the lot of the senior registrants of the Province to double their work, with the result that many are almost at the breaking point; physicians who had retired are being requisitioned to meet the emergencies.

The new wing of the Calgary General Hospital is nearing completion and is of modern construction. It will be splendidly equipped, chiefly for the care of maternity patients, infants and children. There will be accommodation for 49 maternity patients, 60 infants, 42 children and 20 adult general patients.

Work was started on the construction of this building in August 1942 but owing to shortage of labour and difficulty in obtaining building and other material, the date of this much-needed edifice has been delayed. The cost will be approximately $350,500.

The Sara Macdonald Hall, Calgary General Hospital, the new Nurses' Home, was opened in August, 1943. There is accommodation for 69 nurses, each having her own room. It is connected by a covered passageway with the new training unit and the two blocks of the old Nurses' Home. G. E. LEARMONTH

British Columbia

The new wing of the Vancouver General Hospital has recently been opened and it is hoped that gradually this will afford some relief to the hospital shortage in Vancouver. It includes a completely modern physiotherapy department and out-patient department, and is of ultra-modern construction.

The return to practice of Colonel Lavell H. Leeson, of Vancouver, marks the end of three years on active service of this officer, who did notable work in Great Britain, having gone over with the 3rd Division.

Wing Commander D. M. Meekison has also resumed practice in Vancouver, after two years of service in the orthopædic hospitals in Great Britain.

A rather acrimonious controversy is raging over the subject of the chlorination of the water supply of Greater Vancouver, which was put into effect recently. Vancouver has always been proud and with very good reason of one of the purest water supplies on the continent, but careful bacteriological checking has shown of recent years that there is undoubted contamination. International agreements and modern practice alike have forced public health authorities to a decision that the only safe method to adopt in this case is chlorination. Naturally, considerable hostility has been aroused—some of it very ill informed—some of it quite sincere and well meant. In any case the fight is on and is likely to continue for some time. Since most major cities in North America have adopted the same policy, it is probable that when the storm has subsided we shall accept the situation with good grace. It may be added that there is no impairment of the taste of the water.

J. H. MACDERMOT

Manitoba

Dr. Charles Frederick Code, assistant professor in physiology, University of Minnesota, Medical School, addressed the newly-formed Manitoba Institute for the Advancement of Medical Education and Research on October 27. His subject was the qualifications of a good medical research man and the distinct benefits to any community of activity in medical research. Medical research, he said, uses the experimental method in finding new facts, and the master of the experimental method is the man who devises experiments, the result of which give clear-cut decisive answers to fundamental questions.

Dr. Code graduated in medicine from the University of Manitoba in 1934 and has had a distinguished career. He held the Bayliss-Starling Memorial Scholarship, University of London, 1936, and in 1938 was awarded the Theobald Smith Medal and award in medical science by the American Association for the Advancement of Sciences.

Dr. Gerard Allison has resigned as editor of the *Manitoba Medical Review* and has been succeeded by Dr. J. C. Hossack.

ROSS MITCHELL

New Brunswick

Dr. Norman Skinner, of the staff of the Saint John General Hospital, was a guest speaker this year on the program of the Dalhousie Medical School Refresher Course.

The speaker at the regular monthly meeting of the Saint John Medical Society was Dr. H. I. Stander. His subject "Handling of difficult labour". This meeting was especially well attended and discussion was brisk and interesting. Dr. Stander has just previously completed an appearance at Halifax.

Dr. Louis Maurice Veniot, son of Dr. C. J. Veniot of Bathurst is serving as a medical officer with the R.C.A.M.C.

Dr. A. L. Donovan and Dr. F. J. Cheeseman, of Saint John, are convalescing after a prolonged stay in hospital. Both will resume practice shortly.

Dr. C. L. Emerson, Medical Health Officer for the City of Saint John, has found that pasteurization of milk in the city has not been entirely satisfactory and, although difficulties are numerous, particularly due to man power shortage, improvement has been assured.

A good number of New Brunswick physicians were in Ottawa recently attending meetings of the Royal College of Physicians and Surgeons, the Canadian Medical Procurement and Assignment Board, and the executive meeting of the Canadian Medical Association.

Dr. Geo. White, of Saint John, attended the meeting of the Canadian Gynæcologists recently at Toronto.

Dr. K. A. Baird of West Saint John attended the clinical meeting of the Medico-Chirurgical Society at Montreal.

Dr. T. E. Grant, of Saint John, was among those attending the Refresher course of Dalhousie University at Halifax.

A. STANLEY KIRKLAND

Nova Scotia

Dr. R. E. Pugh of Great Village, who met with a serious accident several months ago, has moved to North Sydney to take over the practice made vacant by the death of Dr. A. K. Roy. There is no immediate prospect of a successor to Dr. Pugh in a very extensive area approximately sixty miles in length.

Dr. Arthur Sangster, who has spent the past twelve years in postgraduate study and practice in Great Britain, is now in charge of surgery in an institution of over twelve hundred beds in Ayrshire, Scotland. This is but one of a series of fine surgical appointments enjoyed by Dr. Sangster, who has also acquired the Edinburgh and English Fellowships in Surgery.

Dr. W. E. Pollett, who practised in New Germany prior to going to England for postgraduate study, has recently been successful in acquiring the Fellowship of the Royal College of Surgeons of England.

And while we are on the subject, special mention should be made of recent honours for Dr. Malcolm B. Dockerty, Gold Medallist in the Class of 1934 at Dalhousie. Immediately following graduation Dr. Dockerty was granted a Fellowship at the Mayo Clinic, and has recently been appointed Associate Professor of Pathology at the Foundation. He is thirty-four years of age.

In spite of the War and Foreign Exchange barriers, the shuttle between Nova Scotia and Florida still moves back and forth. Dr. William Chisholm, whose beautiful summer home is at Cape George, Antigonish County, has already gone to St. Petersburg. Dr. George H. Cox of New Glasgow will no doubt continue his practice of many years and follow soon. Both have achieved notable success in their special field, Eye, Ear, Nose and Throat.

Lieut.-Col. Avery C. DeWitt who has been attached to the Departmental Offices of M.D. No. 6 since the early days of the war, having reached the age limit, retired and has resumed civilian practice in Wolfville.

Dr. R. M. Rowter, who graduated in the last class in Medicine from Dalhousie has associated himself in practice with Dr. A. B. Campbell of Bear River. The civilian population in this area was practically doubled by the establishment of the Naval Centre at Deep Brook nearby. A very welcome relief has thus been afforded Dr. Campbell, who, in spite of his great stature and athletic prowess, was beginning to feel the strain.

For the past three years the annual Refresher Course for physicians, conducted by Dalhousie University, has not been held. This year, recognizing the needs of the

civilian physicians to brush up, particularly on recent advances, it was resolved to give the Course. This resolution was strengthened by Brigadier Meakins, who felt it was particularly needed for physicians in the Services. Ready assistance was secured from the American Medical Association, the American College of Surgeons, and the American College of Physicians. Through their generosity Dr. Henricus J. Stander of Cornell and Dr. Max N. Peet of the University of Michigan came to give a very valuable contribution, the former in Obstetrics and Gynæcology and the latter in Neurosurgery.

The Committee, under the Chairmanship of Dr. J. V. Graham, prepared a most diversified and comprehensive program, which covered clinical demonstrations and lectures in a very wide field. Notable assistance was given to the Members of the Faculty of Medicine participating by Medical Officers in the Armed Forces.

A very modest registration fee of $2.00 was required for civilian physicians: no fee in the case of physicians in the Armed Services.

The Course extended from October 11 to 15, inclusive. Clinics and demonstrations were held at the Victoria General Hospital, the Children's Hospital, the Nova Scotia Hospital, the Royal Canadian Naval Hospital, the Halifax Military Hospital, and the Dalhousie Public Health Clinic.

The carefully laid plans bore abundant fruit: 363 physicians registered. Of these 135 were civilian practitioners, coming from the three Maritime Provinces, with the greater number from Nova Scotia. Ninety-two registered from the R.C.A.M.C.; 72 from the medical staffs of the Royal Canadian Navy; and 42 from the Royal Canadian Air Force. Three medical officers of the United States Army also attended. All expressed great appreciation of the material offered for study, as well as of the excellent lectures and demonstrations given. It was an effort well worth while and by many has been voted the best Refresher Course since their initiation twenty years ago.

A great deal of credit is due the Refresher Course Committee, composed of very busy men, as well as all who participated in carrying out the program.

H. L. SCAMMELL

Ontario

The event of the month was the second wartime conference of the Ontario Hospital Association and the annual conference of the Catholic Hospital Association, both held in Toronto, October 19 to 22, 1943.

The Catholic Hospital Association representing 28 institutions in the province met in St. Michael's Hospital on October 19. Adjournment of the morning session to attend Pontifical Mass in St. Michael's Cathedral celebrated by his Eminence Cardinal Villeneuve preceded an address by Dr. J. J. Heagerty, Deputy Minister of Health, Ottawa, on the National Health Insurance Bill. In the afternoon addresses were given by Dr. Wm. Magner, Rev. A. J. Devanny, C.S.B. and Bishop Cuthbert O'Gara, vicar apostolic of the Passionists in China. Rev. Sr. Mary Paul who is in charge of the record library and training school for record librarians in St. Michael's Hospital read a paper on the responsibilities of those in charge of hospital records. In the evening Dr. Harvey Agnew spoke on the Problems of Hospital Rationing and Price Control and on Availability of Hospital Supplies and Equipment.

On October 20 the sessions of the Ontario Association began with a breakfast meeting at 8 o'clock in the Royal York Hotel held by the Women's Hospital Aid Association. The address was by Lt.-Col. E. A. Smellie, matron-in-chief R.C.A.M.C. who represented the Director-General of medical services. For the next two days the various sections discussed special problems in separate or in general sessions.

Perhaps the most important address was given by Hon. Dr. Vivian, Minister of Health for Ontario. He showed himself to be keenly aware of the problems of finance facing the voluntary hospitals, and it is now almost certain that the legislature will adjust the maintenance fees of public ward patients to a more equitable level.

Mr. E. A. Horton, the retiring president, was made Hon. Vice-president and he is succeeded in the presidency by Miss E. Muriel McKee, of Brantford.

Lt.-Col. R. I. Harris, consultant in orthopædic surgery to the Canadian Armed Forces, has returned after six weeks' absence in Great Britain. Crossing was made by aeroplane both going and coming.

Major L. G. Brayley was reported last month as taking up special duties in Oakville. He has been promoted to Lt.-Colonel and has succeeded Lt.-Col. Kappelle who has recently retired as Officer Commanding the Military Hospital in Hamilton.

Lt.-Colonel William J. Deadman, C '11, M '13, has been appointed Editor of a new medical journal, *The Journal of the Canadian Medical Services*, published for the medical personnel of the Navy, Army, Air Force and Department of Pensions and National Health.

Dr. B. T. McGhie, Deputy Minister of Health for Ontario, was elected president of the Canadian Public Health Association at the annual meeting held in Toronto on October 5.

Major Andrew L. Chute, formerly of Toronto, has been appointed to the Military Division, Order of the British Empire, it was announced yesterday. A member of the Royal Canadian Army Medical Corps, Major Chute lived on Russell Hill Rd., before enlisting. His wife and daughter now live at Vegreville, Alta.

Major Chute is 34 years old and was educated at University of Toronto and London, England. Before the war he was research associate in physiology and junior demonstrator in pædiatrics at the University of Toronto and was given leave of absence to enlist.

He was attached for some time to the 8th Army in North Africa, where he did research work on medical hazards in tanks. Some months ago he returned to Toronto to recuperate from an accident in North Africa, but is now back in the field again.

M. H. V. CAMERON

Prince Edward Island

On the evening of September 24, at the Charlottetown Hotel, Charlottetown, P.E.I., Dr. G. F. Dewar was tendered a banquet by fellow members of his profession from different parts of the island. Dr. Dewar was presented with a parting gift as a token of goodwill by those present.

Speeches were made by Dr. I. J. Yeo, Dr. W. J. P. McMillan, Dr. J. McNeill, and others, who eulogized Dr. Dewar as a physician with an outstanding record, he being a member of the medical profession for over forty years.

Dr. Dewar, who is retiring from practice will with his son Lloyd, make his future home in Vancouver, B.C.

A. J. MURCHISON

Quebec

Le Dr Gaetan Jarry de Montréal a été promu au grade de Lieutenant-Commandant de la Marine Royale Canadienne. Le Dr Jean Bouchard, également de Montréal a obtenu le même grade.

L'Université Laval vient d'instituer le Baccalauréat en Sciences hospitalières et en Hygiène Sociale. Ces études, qui dureront deux années seront un complément de formation générale de l'infirmière et l'initieront plus parfaitement non seulement aux services de médecine et de chirurgie, mais aussi aux laboratoires, aux salles d'opérations et à l'administration d'un hôpital entier.

JEAN SAUCIER

Saskatchewan

A new registrant with the College of Physicians and Surgeons of Saskatchewan is Dr. Alvin E. Buckwold, who has now become a member of the R.C.A.M.C. Dr. M. H. Brook, who has been associated with Dr. Baltzan, of Saskatoon, has also joined his Majesty's Services.

Dr. L. J. C. Perreault, formerly of Hoey, Sask., is now located at Bentley, Alberta, and Dr. Ralph McGregor has left Kerrobert, Sask., to take up a practice at Wetaskiwin, Alberta.

Dr. H. T. Hogan, recently released from active service, is practising at Young, Sask., and Dr. Harriet I. Houston, who was at Bethune, has now located at Tuxford, Sask.

The Saskatchewan medical men attending the International Medical Assembly at Chicago, Ill., October 26 to 29, were Drs. J. A. Valens, L. H. McConnell, H. C. Whitemarsh, A. Hazell, and J. F. C. Anderson, of Saskatoon, and Dr. J. B. Ritchie, of Regina.

H. D. HART

General

Finney-Howell Research Foundation, Inc. — Announcement has been made by this Foundation that all applications for fellowships for next year must be filed in the office of the Foundation, 1211 Cathedral Street, Baltimore, Maryland, by January 1, 1944. Applications received after that date cannot be considered for 1944 awards, which will be made the first of March, 1944.

This Foundation was provided for in the will of the late Dr. George Walker of Baltimore for the support of "research work into the cause or causes and the treatment of cancer". The will directed that the surplus income from the assets of the Foundation together with the principal sum should be expended within a period of ten years to support a number of fellowships in cancer research, each with an annual stipend of two thousand dollars, "in such universities, laboratories and other institutions, wherever situated, as may be approved by the Board of Directors".

Fellowships carrying an annual stipend of $2,000 are awarded for the period of one year, with the possibility of renewal up to three years; when deemed wise by the Board of Directors, special grants of limited sums may be made to support the work carried on under a fellowship.

Applications must be made on the blank form which will be furnished by the Secretary or any member of the Board of Directors.

American Board of Ophthalmology.—The deadline for filing applications for examinations of the American Board of Ophthalmology in Chicago next October, is April 1, 1944. All applications received after January 1, 1944, will be subject to the increased total fee of $75.00.

Fats and fatty oils, vital to man's diet, were consumed by Americans in 1940 at the rate of about fifty-six pounds per person, with another twenty-eight pounds used in soap, paints, lubricants, etc.—*The Diplomate*, 1943, **15**: 267.

Book Reviews

Urology in General Practice. N. F. Ockerblad and H. E. Carlson. 383 pp., illust. $4.00. Year Book Publishers, Chicago, 1943.

This very handy book of 383 pages, with 97 figures, mostly radiographs, is admirably suited to its purpose. It is written for the general practitioner who may or may not be within easy reach of a special urologist's advice or assistance. The young doctor will find the information he needs most frequently much more readily in such a book than in the more complete texts which are used to cover the subject in college courses. The authors show a very practical attitude in dealing with lesions of the uro-genital tract. The chapter on nephritis will appear to physicians as unnecessary, for they would seldom think of turning to a urologist for guidance in that subject.

There is still too much doubt about the value of the various sulfonamide preparations, and also about that of the hormones to permit the rather positive opinions expressed here; and it may be that the definite objection to cystoscopy in anuria would not be supported by the majority of specialists. Fever therapy also is gaining more favour than they seem to admit. The authors do well for their readers and the public in emphasizing the danger of transmission of infection by urine from tuberculous kidneys; and the importance of greater watchfulness for cancer of the prostate, and also in their indication that urethritis is more often non-specific than ordinarily supposed.

Essentials of Syphilology. R. H. Kampmeier. 518 pp., illust. $6.00. Lippincott, Montreal, 1943.

This volume on syphilis is a well conceived attempt on the part of the author to present this important disease in a manner suitable to the student, the general practitioner and the health officer. There are many excellent treatises on syphilology but none satisfactory to the beginner. This volume covers a long felt need.

The author states that his objectives are to present a concept of syphilis as a systemic disease, the need for exact laboratory diagnosis before institution of treatment, to raise the index of suspicion as to the rôle of syphilis, to improve the standard of therapy, and, lastly, to emphasize the need for a public health program. Much has been written about the treatment of syphilis by and for the specialist but the author rightly feels that, since the majority of patients will be treated by the general practitioner, emphasis should rather be placed on the proper training of the family doctor in the handling of this condition.

The bulk of the book is devoted to the diagnosis and treatment of the various manifestations of syphilis. The last four chapters by a collaborator are devoted to various epidemiological and public health measures so essential to the proper control of the disease. In view of the greatly increased incidence of syphilis because of war conditions, this aspect of the matter is duly stressed.

Many everyday problems are discussed clearly and without ambiguity. The print is clear and the photographs are well defined and self explanatory. For the student and practitioner this volume is a "must".

A Manual of Pulmonary Tuberculosis (Part 1) and an Atlas of Thoracic Roentgenology (Part 2). D. O. N. Lindberg. 219 pp., illust. $8.75. Thomas, Springfield, Ill.; Ryerson, Toronto, 1943.

This book presents a concise, clear and accurate summary of present concepts of tuberculosis. The first chapter on diagnosis covers the essential considerations and is of particular value in that there is no elaborate classification and the author does not labour fine or controversial points of physical diagnosis. The section on roentgenological interpretation is particu-

larly practical and relevant to the intelligent management of tuberculosis and the same comment applies to the section on laboratory procedures.

The chapter on general management presents a sound and clear outline of patients' routine and its upward gradations and is of special value to sanatorium physicians. The chapter on surgical considerations is a sound and conservative summary and evaluation of present knowledge, but is mainly of value to those already having basic knowledge and experience with the various surgical procedures. The chapter on control aspects is basically sound, but rather sketchy.

The book contains an atlas of thoracic roentgenology (145 plates of chest films). The films are reproduced none too clearly, but are selected and described well and portray x-ray appearances of the significant types of pulmonary tuberculosis, the result of various methods of treatment and other conditions of differential significance.

On the whole it is a good book, has an easy and direct style, and summarizes in a practical way the significant features in the diagnosis and treatment of pulmonary tuberculosis.

Clinical Significance of the Blood in Tuberculosis. G. L. Muller. 515 pp. $3.50. Commonwealth Fund, New York, 1943.

Dr. Muller has performed a good service in analyzing and evaluating the extensive literature on the subject of blood changes in tuberculosis.

The leucocytic formula and sedimentation test are considered of great value in following the tuberculous process and in ascertaining the results of treatment. The special rôles of the neutrophile, lymphocyte and monocyte are dealt with in detail. Rather surprisingly, almost as much space is given to the eosinophile as to the monocyte and lymphocyte combined. The Arneth count and its modifications are thoroughly discussed. The types of anæmia in tuberculosis are described, and it is pointed out that the exact type must be determined if treatment is to be satisfactory. The section on the sedimentation test is particularly informative. Various techniques are critically analyzed and a plea made for standardization. A method in which the rate is measured during the period of most rapid fall, and is corrected for variations in hæmatocrit, is recommended. The use of clinical and hæmatological data to measure the constitutional reaction in tuberculosis, and to assess the value of treatment, is discussed in great detail. In these sections, particularly, Dr. Muller draws extensively upon personal experience gained at Rutland State Sanatorium and analyzes over 6,800 complete blood examinations on 1,000 patients. These chapters show that much more information can be gained from a careful study of blood data than is done ordinarily, but the necessity of correlating hæmatological and clinical data to obtain a complete picture is repeatedly emphasized. Blood techniques applicable to tuberculosis are described. There are numerous tables and charts, the latter being especially good. The bibliography contains over 600 references.

The book should be of real value, not only to pathologists and technicians, but to all who are interested in the scientific study of tuberculosis.

Behavior and Neurosis. J. H. Masserman. 269 pp. $3.00. University of Chicago Press, Chicago, 1943.

This book is primarily concerned with a description of a series of experimental studies of animal behaviour and an attempt to correlate these findings with variations in human behaviour such as are found in clinical psychiatry. In the first part of the book a detailed description is given of the procedure employed to produce experimental neurosis in cats, with the methods used in the treatment of the abnormal behaviour of these animals. Illustrations of the apparatus with excellent photographs of the various behaviour responses help to indicate very clearly the manner in which these experiments were made. A considerable section of the book is devoted to a review of the literature and experimental studies on behaviour and neurosis, and this is followed by two chapters on clinical and psychotherapeutic applications. From his observations the author concludes that in the employment of effective psychotherapy one may frequently have to resort to a combination of the various procedures utilized in psychiatric treatment. In this regard he places special emphasis on such measures as the initial relief of excessive anxiety, the establishment of an adequate therapeutic relationship between the patient and the physician, the importance of attempting to induce the patient to develop more adequate norms of social conduct, and the need for consistent psychotherapy to resolve the emotional conflicts which gain expression in the form of abnormal behaviour. This book is an important contribution to neurophysiological research and to clinical psychiatry.

Tales from the Inns of Healing. Christian Medical Association of India, Burma and Ceylon. 164 pp., illust. Price Rs. 2/8. Christian Med. Ass'n., Nelson Square, Nagpur, C.P. India, 1943.

The title word "tales" describes the contents of the book. Chapter headings are: Along the Northern Frontiers; Healing Men; Women's Hospitals; Children; The Influence of Ignorance, Superstition and Fear; Changed Lives; The Church and the Hospital; Among the Villages; 'The Lepers are Cleansed'; Christian Missions and Tuberculosis; Health and Preventive Work; Prayer and Healing; Training for Christian Medical Service.

To one familiar with the work of Christian hospitals in the Orient this book, is of interest. To others it will prove a source of valuable information about the excellent work being done by hospitals maintained and supported by the Church in Eastern lands.

Besides the splendid professional and educational services rendered, these institutions are an important agency for promoting friendship and mutual understanding between East and West—no small service in these days. The paper, printing and photographs are excellent.

Chemotherapy of Gonococcic Infections. R. D. Herrold. 137 pp. $4.00. C. V. Mosby, St. Louis; McAinsh, Toronto, 1943.

The author believes "that any routine procedures that are recommended for the management of gonococcic infections should at the present writing be streamlined as far as possible and stripped of all unnecessary accessories." He has been very successful in his attempt to follow this course and has produced a short but very readable book which covers the essentials of present day treatment of gonorrhœa, with particular stress upon the use of sulfathiazole and sulfadiazine. There is a full discussion of methods of diagnosis and of determination of cure in men, women and children. The "sulfonamide failures" are considered in some detail and methods of treatment are described. The final chapter contains case histories illustrative of many types of cases encountered and of the varied accessory forms of treatment which may be necessary. This is an eminently practical and useful book and it should be read carefully by any practitioner who treats gonorrhœa.

Neurology. R. R. Grinker. 3rd ed., 1136 pp., illust. $8.75. Thomas, Springfield, Ill.; Ryerson, Toronto, 1943.

There are three classes of neurological textbook to be found nowadays: the elementary book (designed particularly for the undergraduate student), the intermediate type (for the "busy practitioner" and the neurologist) and the larger reference works, meant for the neurological specialist alone. Grinker's book be-

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longs to the intermediate type, and is undoubtedly the best of its class today.

This new edition contains an amazing mass of neurological information, anatomical, physiological, pathological, clinical—one can truthfully say, too much information—for its size. With an aim to record everything, new and old, there has often been lack of critical selection of material. However, the book will have great value in bringing to its general medical readers much of the newer work on subjects such as cerebellar function, extrapyramidal diseases and epilepsy, which would otherwise remain hidden away in specialized neurological journals.

The style is clear and concise, and the chapters are pleasant to read. There are excellent sections on the cerebrospinal vascular system, and on syphilis of the nervous system. The chapter on intracranial tumours by Paul Bucy is outstanding. He stresses the important teaching that "the long heralded triumvirate of headache, vomiting and choked disc now fail us too frequently to be depended upon. . . . The only true symptom of an intracranial tumour is the gradual progressive loss of neurological function."

The many new illustrations add greatly to the interest of this edition. Only, the electroencephalographic tracings are poorly chosen; mistakes in spelling are frequent. There is a good bibliography at the end of each chapter and a good index.

Undoubtedly this book will be widely read by medical men everywhere; it can be highly recommended to all who would keep up-to-date in the field of neurology.

Diseases of the Skin. Edited by O. S. Ormsby and H. Montgomery. 6th ed., 1360 pp., illust. $16.00. Lea & Febiger, Phila.; Macmillan, Toronto, 1943.

This sixth edition of Ormsby's standard work on Dermatology appears to have been extensively revised and in part rewritten. There is a large bibliography in which many of the references are, of necessity, not recent but many are as late as 1941 which, in a work of this size, is perhaps as much as can be expected. Minor omissions are noted here and there, such as failure to mention benzyl benzoate in the treatment of scabies or the use of high frequency currents instead of electrolysis in the treatment of superfluous hair. The illustrations are numerous and good and the notes, in finer print, on histopathology under each disease are extensive.

This is an encyclopædic work which has stood the test of years and has been brought up to date.

Man in Structure and Function. F. Kahan. Translated from German and edited by G. Rosen. 2 vols., 756 pp., illust. $12.00 per set. A. A. Knopf, New York; Ryerson, Toronto, 1943.

This is a remarkable book. Indeed, it might be characterized as a "non-such". At least, it is quite unlike any book that this reviewer is acquainted with. In his preface the author comments on the vast difference that exists between the anatomy and biology of 1880 and that of 1943. The problems that we are studying now are much more extensive and complicated than they ever were and are getting more so every day. The author has undertaken to expound the wonders of the animal body, covering the whole gamut of the subject from the electron to the finished product, dealing with the animal body from skeleton to the more special structures and with a discussion of the many functions of the body.

The method of expounding this vast subject—the life of man—is the essentially modern one of teaching by means of appropriate pictures and diagrams which are more easily imprinted on the mental retina, enhanced the while by striking comments and comparisons, all of these giving character to the book.

Much that is in the book is well known to medical men, biologists and physiologists, yet they can find in it much to rivet their attention and for the intelligent layman the exposition will be of entrancing interest and will open up new worlds of thought. A book not to be passed over.

Autonomic Regulations. E. Gellhorn. 373 pp., illust. $5.50. Interscience Publishers, New York, 1943.

This book deals with the actions of the sympathetic and parasympathetic divisions of the autonomic nervous system from the viewpoint of the experimental physiologist.

The author details the actions of the autonomic system in adjusting the body to abnormal states, such as anoxia, asphyxia, hæmorrhage and hypoglycæmia. He stresses the importance of adrenalin secretion by sympathetic stimulation and of the secretion of insulin by parasympathetic (vagus) stimulation. The sympathetic-adrenal and vago-insulin systems, although antagonistic in their general actions, are frequently called into action together and integrate with somatic nervous mechanisms in the necessary adjustment-changes to altered bodily states.

The final chapters of the book deal with the central hypothalamic control of autonomic adjustments necessary in such conditions as the regulation of blood sugar, general and spinal anæsthesia, convulsive states, and schizophrenia.

Kinetic Bandaging. S. W. Meyer. 310 pp., illust. $4.40. Davis, Philadelphia; McAinsh, Toronto, 1943.

Of books on bandaging and first aid there seems to be no end, particularly in wartime. This is one of the best. The term "kinetic" as applied to this subject is unusual, but is employed by the author to connote simplicity, dexterity, and ease of application of bandages. The book is freely illustrated and the various turns in the bandages are numbered consecutively. The idea underlying the plan is to teach bandaging as if one were viewing a moving picture. All this makes for simplicity and ease of application, and is all to the good. With this end in view the author regards the body as planned after the fashion of three basic geometric figures, ovoids, cylinders, and truncated cones, and his principles in bandaging are readily applicable to any part of the body. The cumbersome methods hitherto employed can, therefore, and should be discarded. The essentials of a good bandage, simplicity, effectiveness and harmlessness are emphasized.

The book is particularly useful to those trained in first-aid practice, and will be of value to the medical man, whom, we regret to say, is seldom well grounded on this subject.

Air-borne Infection. D. O'Hara. 114 pp., illust. $1.50. Commonwealth Fund, New York, 1943.

Dr. O'Hara has given us a delightful small book on air-borne infections which no one in the profession should deny himself the pleasure of reading. It is far from being a textbook, since clinical descriptions are entirely omitted. No effort is made to add to our knowledge of the clinical aspects of common cold, pneumonia, diphtheria and the rest. Instead, the author describes what he thinks should be our balanced concepts of these diseases and deals with them in general terms as factors in our ever changing environment. Indeed, the book might almost be said to deal with the philosophy of respiratory disease. Its pages are packed with clear ideas and with great wisdom.

First attempting to outline the scope of preventative medicine, the author finds that its boundaries are entirely artificial aside from public health activity. "For example, good obstetric practice is preventative gynæcology; good gynæcological practice includes the prevention of certain genital cancers such as those of the cervix, which, if not prevented, become material for still other types of practice . . . And so on."

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spreads through the air like tobacco smoke. How hard it is then to avoid the air transfer of disease. "We expose ourselves by the simple act of breathing communal air—air which contains the exhalations of other people".

All air-borne infections have become milder and less frequent during the last 40 years. The author demonstrates this without trying to explain it. Diphtheria for instance was steadily declining as a cause of death well before immunization was introduced. Tuberculosis eradication is greater than statisticians would have dared predict. If standards of living and early detection of disease can be continued much more will be done and "the need for hospital beds for tuberculosis will begin to disappear, and the disease become rarer and rarer—but (say it softly) within a few generations the herd immunity to disease will also disappear."

Actively acquired immunity is superior to any other. The author says he has recently become a firm believer in the old fashioned idea of getting the childhood diseases and being done with them—at least in regard to measles, mumps and chicken-pox. We get a first-class immunity for a very low price. "This is true for both the individual and the community. Those who are promoting modifying devices against measles don't know a bargain when they see it."

The reviewer's task is difficult because there is not a page of this splendid book which will not bear quoting. No one can read it without pleasure or without profit.

Brucellosis in Man and Animals. I. F. Huddleson. Revised edition. 379 pp., illust. $3.50. Commonwealth, New York, 1943.

Of the various manifestations of brucella infection in man and animals, much as been written in recent years which is often not easily accessible to those actively engaged in the diagnosis and treatment of brucellosis. Prof. Huddleson and his co-authors have reviewed the literature on this subject and from it and their own extensive experience have revised, enlarged and brought up to date a text first published by the senior author in 1934 and rewritten under the present title in 1939.

The scope of the book is comprehensive. For the laboratory worker we find details of the most satisfactory procedures for the isolation and identification of the causal micro-organisms and other diagnostic tests. It is, however, to the clinician that this book will prove most useful. The problem of diagnosis is discussed in detail, with many case reports to illustrate the types of infection. The significance of laboratory aids in diagnosis is analyzed. Treatment—admittedly imperfect—is carefully considered, many of the older methods being mentioned only to be dismissed as unsatisfactory. The method recommended is the use of a culture filtrate called "brucellin" (not to be confused with "brucellergen" which is a protein nucleate fraction of brucella cells and used in demonstrating allergy). With more than 2,000 cases treated with brucellin and using adequate controls it was found that the course of the disease was greatly shortened by this method though about 15% of cases showed no response. The book is highly recommended.

Essentials of Industrial Health. C. O. Sappington. 626 pp., illust. $8.00. Lippincott, Montreal, 1943.

The necessity to conserve man power receives lip service from everyone these days. The armed forces have been seized with the importance of conservation and have provided medical health services for enlisted men greatly in excess of any originally available for the civil population. The industrial population which plays an equally vital rôle in the present crisis, is served by health programs which are generally spotty. In some industries, the health services are good; in others, there are no health services at all. Sappington has attempted to cover, in a comparatively small span, the principles of preventive medicine as applied to industry. The literature on this subject has now become so extensive that it is difficult adequately to cover the subject short of writing an encyclopædia. The author has divided his book into three sections. The first, Industrial Health Administration, deals with such matters as the organization and administration of industrial medical departments. There is much valuable information in this section, and it should prove useful to industrial physicians who are striving to improve services in their own areas. The second section, Industrial Hygiene and Toxicology, has to do with the more specialized industrial health problems produced by the industrial environment, such as defective ventilation, dusts, poisons, factors contributing to fatigue, and the like. This section suffers somewhat from sketchy treatment and from the inclusion of long lists of occupations exposed to various hazards which might better have been omitted or carried in the appendix. Parts of this section are very similar to a publication of the United States Bureau of Labour Statistics, Occupation Hazards and Diagnostic Signs. The third section, industrial Medicine and Traumatic Surgery, rounds off the book by including chapters on subjects which have not been covered in the first two sections, and contains, as a matter of fact, some very useful data on subjects not ordinarily found in medical textbooks, such as selection of workers, personnel relationships, night work, shift work, workmen's compensation, and so on.

The book is almost entirely North American in its application and so should prove valuable to Canadian physicians. The author has had many years of experience as consultant in industrial medical problems, and has drawn on a large bibliography to lend added authority to his own findings.

Vascular Spasm, Experimental Studies. A. J. Nedzel. 151 pp., illust. $2.75. University of Illinois Press, Urbana, 1943.

In this little work, the author, who is Associate Professor of Pathology in the University of Illinois, presents a carefully worked out experimental study of some of the chief factors in the pathology of disease, notably those concerned with the vascular system. He points out the important part that environment plays in the incidence and development of disease processes. For reasons given he is led to concentrate on the vascular system as the final regulation of the functions of the cell in its readjustments to the changing demands upon its activities. A mere functional distortion of a normal activity of the circulatory system, if greatly pronounced or prolonged, or both, may precipitate disease in the organ or bodily region in which the disturbance is centred. His view has both clinical and experimental evidence to support it: the author has endeavoured to bring additional experimental data to his proof. He refers to experimental studies on the subject of vascular spasm, and details his observations on the action of pitressin on the vessels and then takes up in more detail the conditions of endocarditis, gastric ulcer, diseases of the liver and kidneys, the central nervous system. The book is well documented and the illustrations are excellent.

This is a book for the specialist in physiology and pathology, and is not intended or adapted for the general practitioner.

The Rôle of Nutritional Deficiency in Nervous and Mental Disease. 215 pp., illust. $8.10. Williams & Wilkins, Baltimore; University of Toronto Press, Toronto, 1943.

This highly concentrated volume is the twenty-second of a series of research publications which the Association for Research in Nervous and Mental Disease has been publishing for the last thirteen years. As was to be expected this volume is the last word on a most important phase of medicine. The con-

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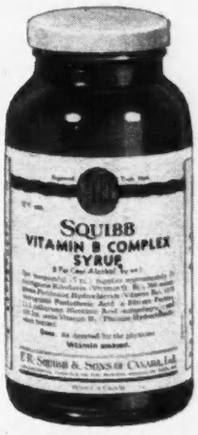

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tributors are all of international repute as clinicians and research workers, and present their personal views on these deficiencies (particularly vitamin) which are vexing many reputable physicians today. In addition a valuable bibliography and index is included.

There are two main sections, each of importance to the physician or research worker—physiological and clinical contributions. The average office is stocked by weekly samples of expensive vitamin pills and expensively printed brochures presented by super-salesmen with unanswerable logic. Small wonder "there is gold in them there pills". The answers to these questions are clearly indicated here, although only a special system of the body is particularly considered.

These contributions clearly show the variety of lesions that are produced in animals and humans by deficiencies. Many specific types of lesion, of disease syndromes, and of neurological and psychiatric abnormalities are discussed. The last chapter is devoted to a consideration of the prevention and cure of nutritive failure.

The inquiring clinician or research student will treasure this publication. The style is lucid and as stated before, one feels more secure when a contributor states exactly what he personally believes about a controversial issue.

Source Book of Medical History. L. Clendening. 675 pp. $10.00. Hoeber, New York, 1942.

The source of medical history in the form of excerpts from medical literature has been compiled by Dr. Clendening in 675 pages. The volume contains 142 passages quoted from nearly as many authors, ranging from the Egyptian papyri and Æsculapius through Hippocrates, Galen, Fracastorius, Harvey, Pasteur, Koch and Lister, to end with Roentgen's dissertation "on a New Kind of Ray". Several of the greater names are quoted more than once. Each passage from a medical author is one of the milestones of medicine: Hippocrates' "Prognosis from Signs", Galen's "On the Pulse", Fracastorius' "Syphilis, or the French Disease", Paré's "On Wounds Made by Gunshot" are examples. Nearly every selection reports a discovery or observation which was new in its day and remains true today. We wonder anew, on reviewing this sort of book, how often in the past the truth has been found only to be lost again.

The only criticism which can be offered concerns the compiler's choices. Dr. Clendening has selected with care from a vast field. A large number of passages are obvious choices and could not very well have been omitted. Something of Osler's Textbook of Medicine, where some of our classical although perhaps not entirely original clinical descriptions are to be found, might have been included.

A feature of the book is the inclusion of passages from lay writers of different periods to demonstrate the place held by the profession in the regard of the general community. Such writers as Molière and Dickens are examples. This reader would willingly trade these selections for more of Hippocrates or John Hunter. Scenes from plays and novels do not mingle gracefully with the other material in this volume.

Human Neuroanatomy. O. S. Strong and A. Elwyn. 417 pp., illust. $7.00. Williams & Wilkins, Baltimore; University of Toronto Press, Toronto, 1943.

Neuroanatomy is a growing branch of anatomy which is of increasing interest to medical students and physicians, though admittedly a difficult subject. The past ten years have seen the appearance of many new textbooks on Neuroanatomy, and frequent new editions of the older texts, indicative that this is a subject in which rapid advances in knowledge are being made continually.

Readers will find in this contribution a clearly-phrased, mature presentation of the subject. In its approach it follows traditional lines, and cannot be said to present any essentially new features. The first eight chapters deal with the general organization of the nervous system, its embryology and its histological structure, in rather more detail than usual. The remaining twelve chapters are concerned with the structure of the spinal cord, brain-stem and brain. The peripheral nervous system is not described. Rather than having an atlas of brain and brain-stem sections at the end of the book, as in some of the older texts, these sections are incorporated within the book itself. The authors have followed throughout the sound practice of constant correlation between the grosser anatomy, as seen by brain dissection and by Weigert-Pal sections, and the finer microscopic details of nuclei and tracts, as seen by more special staining methods. The illustrations and diagrams, many of them new, are a valuable part of the book, and adds to its already clear text.

One might criticize some omissions from the book. For example, Foerster's important description of the human dermatomes might well have replaced the older diagrams which have been used here. In the account of cerebral localization, the work of Penfield and Boldrey has been omitted, even though it corrects and elaborates the earlier work of Foerster. At the same time, Scarff's recent observations on cortical localization of the lower limb are described, even though at variance with most other accounts of the subject.

This is essentially an anatomical presentation; the functions of the various structures are ably discussed in general terms, and some reference is made to clinical symptoms and signs, but no attempt is made to present a detailed account of nervous function. As an anatomical text for medical students, this book can be highly recommended. It will undoubtedly gain an honoured place among textbooks of Neuroanatomy.

BOOKS RECEIVED

The Structure of Morale. J. T. MacCurdy. 219 pp. $2.75. Cambridge University Press, London; Macmillan, Toronto, 1943.

Micrurgical and Germ-free Methods. Edited by J. A. Reyniers. 274 pp., illust. $6.75. Thomas, Ill.; Ryerson, Toronto, 1943.

Transactions of the American Association of Genito-urinary Surgeons. Vol. 35. 366 pp., illust. $2.50. Bruce Publishing Co., Saint Paul, Minn., 1943.

Rehabilitation of the War Injured. Edited by W. B. Doherty and D. D. Runes. 684 pp., illust. $10.00. Philosophical Library, New York, 1943.

Essays in Biology. In honour of Herbert M. Evans, written by his friends. 689 pp., illust. $10.00. University of California Press, Los Angeles, 1943.

Whitla's Pharmacy Materia Medica and Therapeutics. Revised by J. H. Burn and E. R. Withell. 14th ed., 525 pp., illust. $4.25. Baillière, Tindall & Cox, London; Macmillan, Toronto, 1943.

Physiological Principles in Treatment. W. Langdon-Brown and R. Hilton. 8th ed., 323 pp. $3.75. Baillière, Tindall & Cox, London; Macmillan, Toronto, 1943.

Psychopathology. A Survey of Modern Approaches. J. E. Nicole. 3rd ed., 265 pp. $4.50. Baillière, Tindall & Cox, London; Macmillan, Toronto, 1943.

The Medical Annual 1943. Edited by H. Tidy and A. R. Short. 432 pp., illust. $7.50. John Wright, Bristol; Macmillan, Toronto, 1943.

Children Can Help Themselves. M. O. Lerrigo. 219 pp. $2.25. Macmillan, Toronto, 1943.

SUPPLEMENT

The Association

THE SEVENTY-FOURTH ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION, HELD IN MONTREAL,

June 14, 15, 1943

THE seventy-fourth annual meeting of the Canadian Medical Association was held in the Mount Royal Hotel, Montreal, on June 14 and 15, 1943. Due to the request of the Government that travelling be restricted as far as possible on account of the war, the meeting was for business purposes only, no scientific program having been prepared.

The Annual General Meeting

The Annual General Meeting was held on Tuesday morning, June 15th. At this function, Senior Membership was conferred upon the following:

Dr. John Fenton Argue, Ottawa, Ont.
Dr. Sherman William Burgess, Moncton, N.B.
Dr. Robert Judson Cooke, Wolseley, Sask.
Dr. John Ralston Davidson, Winnipeg, Man.
Dr. James Andrew Gillespie, Vancouver, B.C.
Dr. John Sinclair McEachern, Calgary, Alberta.
Dr. John Forbes MacNeill, Summerside, P.E.I.
Dr. William George Reilly, Montreal, Que.
Dr. Louis Joseph Octave Sirois, St. Ferdinand d'Halifax, Que.

Dr. A. E. Archer, the retiring President, presented a brief valedictory address.

After his installation as President of the Association, Dr. D. Sclater Lewis gave his inaugural address.

The General Council

The General Council met on Monday and Tuesday, June 14th and 15th, under the chairmanship of Dr. T. H. Leggett, with 80 delegates present from the nine Divisions.

The following is a list of those who answered the roll call:

Drs. G. A. B. Addy, Rothesay, N.B.
Harvey Agnew, Toronto, Ont.
D. C. Aikenhead, Winnipeg, Man.
A. E. Archer, Lamont, Alta.
A. W. Argue, Saskatoon, Sask.
J. F. Argue, Ottawa, Ont.
F. M. Auld, Nelson, B.C.
W. W. Bartlett, Brampton, Ont.
A. T. Bazin, Montreal, Que.
E. W. Boak, Victoria, B.C.
J. S. Brean, Mulgrave, N.S.
H. E. Britton, Moncton, N.B.
F. A. Brockenshire, Windsor, Ont.
F. T. Campbell, Calgary, Alta.
J. E. Carson, Brantford, Ont.
H. B. Church, Aylmer, Que.
H. R. Clouston, Huntingdon, Que.
P. H. C. Cousland, Victoria, B.C.
J. G. Cunningham, Toronto, Ont.
W. H. Delaney, Quebec, Que.
C. J. Devins, Aurora, Ont.
R. W. L. Earle, Perth, N.B.
H. S. Ellis, Sherbrooke, Que.
H. S. Everett, St. Stephen, N.B.
John Fraser, Montreal, Que.
C. A. Gauthier, Quebec, Que.
Léon Gérin-Lajoie, Montreal, Que.
Duncan Graham, Toronto, Ont.
J. J. Hamelin, North Battleford, Sask.
R. I. Harris, Toronto, Ont.
G. M. T. Hazen, Saskatoon, Sask.
Georges Hébert, Westmount, Que.
V. E. Henderson, Toronto, Ont.
Geo. R. Johnson, Calgary, Alta.
T. H. Leggett, Ottawa, Ont.
D. S. Lewis, Montreal, Que.
M. R. Levey, Edmonton, Alta.
H. D. Logan, Lindsay, Ont.
J. G. B. Lynch, Sydney, N.S.
L. P. Mousseau, Edmonton, Alta.
W. P. McBride, Kensington, P.E.I.
J. W. McCutcheon, Toronto, Ont.
H. E. MacDermot, Montreal, Que.
H. K. MacDonald, Halifax, N.S.
M. H. McDonald, Weyburn, Sask.
J. P. McGrath, Kentville, N.S.
J. A. McGuire, Cornwall, Ont.
D. F. MacInnis, Shubenacadie, N.S.
John F. McNeill, Summerside, P.E.I.
Harris McPhedran, Toronto, Ont.
A. G. Nicholls, Montreal, Que.
O. W. Niemeier, Hamilton, Ont.
Robert T. Noble, Toronto, Ont.
F. S. Patch, Montreal, Que.
W. S. Peters, Brandon, Man.
W. F. Plewes, Toronto, Ont.
A. D. Pollock, Owen Sound, Ont.
H. E. Preston, Brockville, Ont.
F. G. Purdie, Griswold, Man.
John B. Ritchie, Regina, Sask.
W. G. Reilly, Montreal, Que.

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O. E. Rothwell, Regina, Sask.
T. C. Routley, Toronto, Ont.
C. S. Sanborn, Windsor, Ont.
W. deM. Scriver, Montreal, Que.
Howard Spohn, Vancouver, B.C.
P. L. Straith, Courtenay, B.C.
Adèlard Tetreault, Trois Rivières, Que.
M. W. Thomas, Vancouver, B.C.
H. M. Torrington, Sudbury, Ont.
Ethlyn Trapp, Vancouver, B.C.
A. F. VanWart, Fredericton, N.B.
C. J. Veniot, Bathurst, N.B.
Charles Vezina, Quebec, Que.
R. Vance Ward, Montreal, Que.
C. C. White, Chatham, Ont.
J. C. Wickwire, Liverpool, N.S.
R. E. Wodehouse, Ottawa, Ont.
H. M. Yelland, Peterboro, Ont.
Arthur W. Young, Montreal, Que.

REPORT OF THE COMMITTEE ON ARCHIVES

Mr. Chairman and Members of General Council:—

1. Your Committee on Archives reports with regret the loss of the following members by death during the past year:

Acheson, John William, Bridgewater, N.S.
Aikins, Henry Wilberforce, Toronto, Ont.
Alexander, H. E., Saskatoon, Sask.
Armstrong, H. W., Fergus, Ont.
Armstrong, J. P., Ottawa, Ont.
Arthur, G., Lavoy, Alta.
Belanger, J. E., Hull, Que.
Birkett, H. S., Montreal, Que. (Senior Member)
Blair, H. T. F., North Gower, Ont.
Bourgeois, B. G., Montreal, Que.
Bourgeois, Jacques, Montreal, Que. (Military Service)
Boyce, H. A., Kingston, Ont.
Browning, J. W., Exeter, Ont.
Chasanoff, N., Smeaton, Sask.
Cook, R. M., Calgary, Alta.
Corrigan, S. H., Lampman, Sask.
Cruikshank, H. C., Toronto, Ont.
Dafoe, Allan Roy, Callander, Ont. (Honorary Member)
Dalrymple, J. M., Toronto, Ont.
Downing, Albert, Carleton Place, Ont.
Eadie, Andrew Beattie, Toronto, Ont.
Elliott, Jabez H., Toronto, Ont.
Everson, C. C., Morden, Man.
Fleming, Grant, Montreal, Que.
Flynn, R. A., Belleville, Ont.
Fuller, G. F., Cowansville, Que.
Gareau, Romeo, Blind River, Ont.
Gemmell, W. T., Stratford, Ont.
Gibson, William, Kingston, Ont.
Hayter, F. W., Alameda, Sask.
Heil, M. A., Timmins, Ont. (Military Service)
Hendry, George, Toronto, Ont. (Military Service)
Johnson, T. R., Great Village, N.S.
King, R. B., Newboro, Ont.
Lamb, A. S., Vancouver, B.C.
Lewis, Hartley, Oshawa, Ont.
Lough, H. O., Kincardine, Ont.
Lovette, L. J., Bear River, N.S.
Lowry, W. H., Toronto, Ont.
Matheson, John S., Brandon, Man.
Meltzer, Sara, Winnipeg, Man.
Moore, E. F., Canso, N.S.
Morrison, L. N., Mahone Bay, N.S.
McConkey, W. A., Edmonton, Alta.
McCracken, J. F., Hagersville, Ont.
McDiarmid, J. M., New Westminster, B.C.
MacDonald, D. L., Shawinigan Falls, Que.
McFarlane, W. H., Calgary, Alta.
MacGillivray, T. D., Port Arthur, Ont.
McGregor, Herbert, Penticton, B.C.
MacIntosh, Donald S., Montreal, Que.
McKee, S. H., Montreal, Que.
McKibbin, A. E., Oshawa, Ont.
McKinnon, D. L., Truro, N.S.
MacLaren, Murray, Saint John, N.B. (Past President)
McRae, T. T., Brussels, Ont.
Nicholson, W. F., Hamilton, Ont.
Pain, Albert, Hamilton, Ont.
Paquet, Achille, Quebec, Que.
Parsons, H. C., Toronto, Ont.
Paul, N. J., Squamish, B.C.
Powell, J. E., Montreal, Que. (Military Service)
Ravary, J. M., Ottawa, Ont.
Ripley, A. T., West Lorne, Ont.
Robb, John M., Blind River, Ont.
Rodin, S., Winnipeg, Man.
Ross, Gordon W., Frontier, Sask.
Rowlings, D. M., Musquodoboit Harbour, N.S.
Sangster, W. A., Stouffville, Ont.
Scanlon, W. A., Edmonton, Alta.
Scott, H. R., Preston, Ont.
Sebert, L. J., Toronto, Ont.
Sheahan, J. J., Chapleau, Ont.
Siegel, Morris, Hamilton, Ont.
Simmons, J. R., Elmira, Ont.
Singleton, Alfred Harold, Rouleau, Sask. (Military Service)

Sinclair, J. P., Gananoque, Ont.
Smith, Joseph Neelands, Noelville, Ont.
Smith, W. D., Toronto, Ont.
Snider, R. J., Thessalon, Ont.
Sormany, Alfonse, Shediac, N.B.
Throop, W. E., Frankville, Ont.
Towle, R. E., Toronto, Ont.
Walters, A. R., Sherbrooke, Que.
Webster, C. O., Yarmouth, N.S.
Willis, E. E., Hall's Bridge, Ont.

2. The Committee records with special regret the loss of Dr. S. H. McKee and Dr. J. H. Elliott. Both these men had always taken the most active and unwearying interest in the work of the Committee.

No new business came before the Committee during the year.

All of which is respectfully submitted.

H. E. MACDERMOT,
Chairman.

Approved.

REPORT OF THE EXECUTIVE COMMITTEE

Mr. Chairman and Members of General Council:—

Your Executive Committee reports as follows:

MEETINGS OF THE COMMITTEE

3. Since its appointment, your Committee has held four meetings,—one at Jasper Park in June, 1942, and the other three in Ottawa in October, 1942, January and April, 1943. A fifth meeting of the Committee will be held in Montreal prior to the meeting of General Council. Attendance at the several meetings has been excellent.

Approved.

THE ANNUAL MEETING, 1942

4. The Seventy-third Annual Meeting held in Jasper Park in June, 1942, was one of the most delightful in the history of the Association. There were 803 present—540 doctors and 263 ladies. Amid surroundings of unsurpassed beauty, an excellent program was presented with splendid attendance at all sessions.

Our local hosts, the Alberta Division, gave unstintingly of their time, their cars and their gasoline to ensure that everyone present saw as much as possible of the scenery surrounding Jasper. To President and Mrs. Archer and all those associated with them who contributed to the success of the meeting, General Council will no doubt desire to express its deep appreciation.

Approved.

THE ANNUAL MEETING, 1943

5. Following the expressed wish of the Honourable C. D. Howe, Minister of Munitions and Supplies, that conventions be curtailed or cancelled to reduce travel, to stop spending and to focus more time, money and energy on the war, the Executive Committee decided that the annual meeting for 1943 would be restricted to a business meeting.

6. Under the Chairmanship of our President-Elect, Dr. D. Sclater Lewis, our Montreal hosts organized Committees last autumn to carry out a convention program fully in keeping with the high character of former meetings. However, the Committees graciously accepted the decision to curtail the meeting this year.

Approved.

THE ANNUAL MEETING, 1944

It was agreed that if circumstances permit a full annual meeting is desirable for the year 1944. The situation will be canvassed and a report presented to the Executive Committee at the autumn meeting.

ANNUAL MEETINGS OF DIVISIONS

7. It has been arranged that travelling teams of speakers will address the annual meetings of the New Brunswick, Nova Scotia and Prince Edward Island Divisions in July; and the British Columbia, Alberta, Saskatchewan and Manitoba Divisions in September. Your President and General Secretary are planning to attend these meetings.

The Ontario Division held its sixty-third annual meeting during the week of May 23rd.

Approved.

FUTURE ANNUAL MEETINGS

8. At its last regular meeting, General Council accepted invitations for the annual meetings to be held in Toronto, 1944; Saskatoon, 1945.

Consideration should be given to the scope and character of future meetings, having regard to the war.

Approved.

SENIOR MEMBERS

9. In accordance with the provision of Chapter 2, Section 3 of the By-Laws, the following Senior Members were elected by your Executive Committee at a regular meeting of the Committee held in Ottawa on April 29th, 1943:

Dr. John Fenton Argue, Ottawa, Ont.
Dr. Sherman William Burgess, Moncton, N.B.
Dr. Robert Judson Cooke, Wolseley, Sask.
Dr. John Ralston Davidson, Winnipeg, Man.
Dr. James Andrew Gillespie, Vancouver, B.C.
Dr. John Sinclair McEachern, Calgary, Alta.
Dr. John Forbes MacNeill, Summerside, P.E.I.
Dr. William George Reilly, Montreal, Que.
Dr. Louis Joseph Octave Sirois, St. Ferdinand d'Halifax, Que.

These gentlemen have been invited to be present at the Annual General Meeting on the morning of Tuesday, June 14th, to receive their certificates and badges.

Approved.

MEMBERSHIP

10. The following is a comparative statement of membership for 1942 and 1943:

Province	*Paid 1942*	*Military Service 1942*	*Total 1942*	*Paid 1943*	*Military Service 1943*	*Total 1943*
British Columbia	409	201	610	388	250	638
Alberta	550	156	706	550	165	715
Saskatchewan	286	57	343	279	144	423
Manitoba	295	152	447	308	261	569
Ontario	2,491	1,056	3,547	2,349	1,396	3,745
Quebec	641	87	728	625	112	737
New Brunswick	168	60	228	168	80	248
Nova Scotia	268	46	314	257	56	313
Prince Edward Island	30	8	38	38	8	46
Totals	5,138	1,823	6,961	4,962	2,472	7,434

As of May 15th there are 420 members whose fees for the current year have not yet been paid.

It will be observed that 2,472 members are in military service, whose memberships are being carried without fee. Any who have expressed a desire to receive the *Journal* are supplied with it at the rate of $4.00 per year.

Both General Council and the Executive Committee urged that every effort be put forth to increase membership in the Association. It was reported that, at the annual meeting of the New Brunswick Division, the Executive gave notice of motion to increase the annual fee to include membership in the Canadian Medical Association. This proposal if adopted will result in 100% Canadian Medical Association membership in the Province of New Brunswick.

Military Medical Societies

11. The following six Military Medical Societies have been accepted into affiliation, the latter two having made application since the time of our last annual meeting.

First Canadian Division Medical Society (Overseas)
Second Canadian Division Medical Society (Overseas)
Third Canadian Division Medical Society (Overseas)
Fifth Canadian Armed Division Medical Society (Overseas)
First Canadian Army Troops Medical Society (Overseas)
Debert Military Medical Society, Debert, N.S.

General Council will no doubt desire at this time to extend cordial greetings and good wishes to these colleagues and to wish each member an early and victorious homecoming.

Approved.

It was recommended that, next year, the Military Medical Societies in affiliation with the Canadian Medical Association be invited to send representatives to General Council.

Income Tax

12. Within recent months, a memorandum regarding income tax returns issued jointly from the Commissioner of Income Tax and the Association. Copies were sent to all registered physicians in Canada.

13. Complaints continue to reach us regarding automobile mileage allowance (75% of mileage of one car for business purposes) on the grounds that gasoline rationing precludes pleasure driving and, therefore, it should not be arbitrarily presumed by Income Tax Inspectors that mileage shown by Doctors must be reduced by 25% for pleasure purposes. This matter is under discussion with the Income Tax authorities, looking to a satisfactory solution.

Approved.

The War

14. At the last annual meeting, General Council accepted an invitation from the Honourable Colonel J. L. Ralston, Minister of National Defence for Canada, to appoint five members to the Canadian Medical Procurement and Assignment Board. The personnel of the Board was defined by Order-In-Council P.C. 6185, as follows:

(*a*) Medical Director General (Navy)
(*b*) Director General of Medical Services (Army)
(*c*) Director of Medical Services (Air)
(*d*) Director of Medical Services, Department of Pensions and National Health
(*e*) Medical Director of National War Services
(*f*) A representative of the Director of National Selective Services
(The foregoing to appoint one of their number as permanent chairman)
(*g*) Five members of the Canadian Medical Advisory Committee (Central) appointed by the Canadian Medical Association, one of whom shall be appointed permanent secretary at a nominal salary of one dollar per annum.

The duties of the said Board shall be:

(*a*) To tabulate, analyze and utilize the results of the survey made by the Canadian Medical Association of physicians registered in Canada with a view to determining the number available for appointment to the armed forces.
(*b*) To allocate as a result of information obtained in the survey medical officers in the proper proportions for appointment to the three branches of the Armed Forces of Canada.
(*c*) To consider carefully in relation to the available supply of physicians for appointment to the Armed Forces, the requirements of civilian institutions, public health departments, medical schools, war industries and communities in order that there shall be no impairment of essential public health services.
(*d*) To undertake the responsibility for investigating conditions at first hand regarding civilian needs and the possibility of making such arrangements as are possible and expedient where there is an apparent conflict between military and civilian needs.
(*e*) To make further surveys and investigations with respect to the availability of physicians not reached by the survey who are eligible for appointment, in order that adequate provision may be made for the future requirements of the Armed Forces of Canada.

Your representatives are:

Dr. A. E. Archer, Lamont
Dr. T. H. Leggett, Ottawa
Dr. Frank S. Patch, Montreal
Dr. Léon Gérin-Lajoie, Montreal
Dr. T. C. Routley, Toronto,

the last named having been authorized by his colleagues to act as Secretary of the Board.

15. Since its inception, the Board has held five meetings while its Executive Committee composed of the Medical Chiefs of the Army, Navy, Air Force, Pensions and National Health, and the Secretary, has met 40 times. It will be observed that it has been necessary for your General Secretary to spend much of his time in Ottawa during the past year.

16. The nine Divisional Advisory Committees established by the Canadian Medical Association were made integral parts of the Board, and Advisory Committees were also set up representing the Medical Schools, Public Health, Dentistry, Nursing, Hospitals and Industry. The Board has concerned itself with all medical problems relating to the war, but more particularly with the task of providing personnel for the Armed Services.

17. At its inaugural meeting, the Board was advised that the Armed Services would require 810 doctors over a period of nine months. The Board was successful in assisting the Services to secure 881 doctors within this period.

18. With the assistance of twelve full time field secretaries in the persons of twelve medical officers loaned by the Services, a national health survey has been completed with respect to our country's resources and liabilities in the health field. The information gathered will prove to be of much value in the days that lie ahead.

19. A Special Committee under the Chairmanship of Dr. A. E. Archer has surveyed the medical services of the Army, Navy, Air Force and Pensions and National Health.

20. At the last meeting of the Board at which all the Divisional Advisory Committee Chairmen were present, a resolution was unanimously adopted recommending that the Board be continued. Your representatives on

the Board are of the opinion that the participation of the Canadian Medical Association in this war effort has been worth while and should continue.

Approved.

Resolution from the Canadian Medical Procurement and Assignment Board

The following resolution from the Canadian Medical Procurement and Assignment Board was brought to the attention of General Council:

> "It was moved, seconded and carried that, having reviewed the expressed opinions of the Divisional Advisory Committees, this Executive is of the opinion that a useful purpose would be served by the Canadian Medical Procurement and Assignment Board continuing to function and that the Canadian Medical Association be invited to appoint five members to the Board."

General Council and the Executive Committee approved the above mentioned resolution and the following were reappointed to represent the Association on the Canadian Medical Procurement and Assignment Board:

Dr. A. E. Archer, Lamont
Dr. F. S. Patch, Montreal
Dr. Léon Gérin-Lajoie, Montreal
Dr. T. H. Leggett, Ottawa
Dr. T. C. Routley, Toronto

Senior Interns for Teaching Hospitals

Attention was called to the difficulty experienced by hospitals in securing senior interns. It was duly moved, seconded and agreed that General Council recommend to the Canadian Medical Procurement and Assignment Board that, if medical faculties of medical schools in Canada are unable to secure physically unfit medical graduates for senior internship, they be permitted to secure not more than five physically fit medical graduates for this purpose, this to apply to teaching hospitals.

Health Insurance

21. The decision to convene General Council in special session in Ottawa in January of this year (the first special meeting of Council which has ever been held) for the purpose of discussing health insurance, proved to be a wise procedure. At that meeting, Council adopted the following resolution:

> WHEREAS the objects of the Canadian Medical Association are:
>
> 1. The promotion of health and the prevention of disease;
> 2. The improvement of health services;
> 3. The performance of such other lawful things as are incidental or conducive to the welfare of the public;
>
> WHEREAS the Canadian Medical Association is keenly conscious of the desirability of providing adequate health services to all the people of Canada;
>
> WHEREAS the Canadian Medical Association has for many years been studying plans for the securing of such health services;
>
> THEREFORE be it resolved that:
>
> 1. The Canadian Medical Association approves the adoption of the principle of health insurance;
> 2. The Canadian Medical Association favours a plan of health insurance which will secure the development and provision of the highest standard of health services, preventive and curative, if such plan be fair both to the insured and to all those rendering the services.

22. On Tuesday, March 16th, the Honourable Ian Mackenzie, Minister of Pensions and National Health, placed before the Special Committee on Social Security of the House of Commons, an outline of a health insurance measure which, if translated into action, will make health insurance effective throughout the length and breadth of Canada. Elsewhere in the Reports to Council will be found full particulars relating to the activities of the Association in regard to this legislation.

23. Your Executive Committee would here remind General Council that the subject under discussion may be one which will profoundly affect the practice of medicine in Canada for generations to come. It would appear to be the time for our organization to muster its fullest strength.

Approved.

Conclusion

24. Your Executive Committee on your behalf desires to express to committees and individual members sincere thanks for the interest and activity which has been manifested in our mutual problems throughout the year.

All of which is respectfully submitted.

T. H. LEGGETT,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON CREDENTIALS AND ETHICS

Mr. Chairman and Members of General Council:—

Your Committee on Credentials and Ethics begs to report as follows:

25. In the past year two questions were brought forward for consideration by your Committee.

A ruling was requested by a physician who had a contract with a mining company to provide medical care for the mine employees and their families. A committee of these workmen wished to have a medical contract similar to one in effect at another mining centre, and asked other medical men in the community to submit a medical contract. These physicians approached the physician who already had the contract and he informed them that they had no ethical right to interfere with the existing contract. The reply of your Committee was that the welfare of the patient is the primary concern of the physician; that the employees had a natural interest in the selection of the physicians who were to provide medical care for them and their families, and that if the workmen were not satisfied with the present arrangement it would appear better to have it terminated and a new arrangement made.

26. The second question related to fee-splitting. The hypothetical problem was whether it was ethical for the referring physician to send a bill to the patient for the total amount and then send cheques to the surgeon and anæsthetist. The reply was that in the Code of Ethics of the Canadain Medical Association the term fee-splitting is not used. The paragraph dealing with this subject is headed Secret Commissions, and it is the secrecy of the transaction that is condemned. So long as the patient knows where his money is going it matters little whether individual bills are rendered by the physician, surgeon and anæsthetist, or a single bill stating the amount due to each practitioner concerned.

All of which is respectfully submitted.

ROSS MITCHELL,
Chairman.

Approved.

REPORT OF THE HONORARY TREASURER

Mr. Chairman and Members of General Council:—

I have the honour to submit the report of the Honorary Treasurer for the year 1942. The accounts have been audited by Messrs. McDonald, Currie & Company whose certified financial statements are attached. The Toronto office accounts duly audited by Mr. J. H. Dignam have been incorporated in the Treasurer's accounts.

Revenue

27. From a financial standpoint, the year 1942 has been most satisfactory. There has been a substantial increase in the membership of the Association reflected in an increase in fees and subscriptions amounting to $7,857.27. Advertising receipts increased by an amount of $7,061.19. This is mainly due to the higher rates which came into full effect with the January, 1942, issue.

Expenditure

28. The printing costs of the *Journal* increased by over $3,000.00, commensurate with the increased membership. As the result of the year's activities, I am happy to be able to report a surplus of $7,977.19.

Investments

29. All moneys invested in 1942 in the General Fund and in the Trust Funds were limited to Dominion of Canada 3% Second and Third Victory Loan Bonds, due March 1, 1954, and November 1, 1956 respectively. The price for both issues was par but the Third Victory Loan Bonds will be redeemable at $101.00. The details are as follows:

30. General Fund

$100.00 5% Dominion of Canada Victory Loan Bond, due October, 1943, was sold at $103.30. It had been purchased in 1923 at $98.25. It was replaced by a Third Victory Loan Bond.

In addition $5,000.00 was invested in Second Victory Loan Bonds.

31. Osler Memorial Fund

$500.00 Pacific Great Eastern Railway 4½% Bonds matured July, 1942. They had been bought July, 1928, at $99.50. They were replaced by Second Victory Loan Bonds.

32. Blackader Lecture Fund

$500.00 was transferred from surplus revenue to capital and invested in Third Victory Loan Bonds.

33. Lister Club Fund

$4,000.00 City of Winnipeg 5% Gold Debentures, due June, 1943, bought 1925 at $101½, were sold in 1942 at $110½ with a capital profit of $390.88.

$1,500.00 was transferred from surplus revenue to capital. With the total capital of $5,500.00 thus available, Third Victory Loan Bonds were purchased.

34. Osler Scholarship Fund

$2,000.00 of accumulated revenue has been temporarily invested in the Third Victory Loan.

35. Cancer Fund

As further activities have been indefinitely postponed, accumulated revenue amounting to $10,000.00 was temporarily invested in the Third Victory Loan.

36. Medical War Relief Fund

Subscriptions to this fund continued to be received by the Treasurer. The amount for 1942 received and forwarded to the British Medical Association was $3,207.33 which brings the total Canadian contributions up to December, 1942 to $6,649.83.

All of which is respectfully submitted.

F. S. PATCH,
Honorary Treasurer.

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37. Statement No. 1

BALANCE SHEET AS AT 31st DECEMBER, 1942

Assets			Liabilities		
Cash on Hand:			Accounts Payable		$ 111.41
Montreal	$ 25.00		Reprints Prepaid		11.05
Cash in Bank:			Advertising Prepaid		28.50
Montreal	$15,532.17		Prepaid Membership Fees, 1943.	$ 409.50	
Toronto:			Prepaid Subscriptions, 1943	416.90	
General Funds	2,194.29				826.40
Annual Meeting	1,931.39		Trusts—as per Schedule No. 2		35,020.15
	19,657.85		Special Grants—as per Schedule No. 3		16,842.33
		$19,682.85	Surplus Account:		
Accounts Receivable:			Balance at Credit—		
Journal	$ 140.06		1st January, 1942	$116,498.32	
Advertising	1,499.62		*Add*—Profit on Sale of Investments	4.80	
Reprints	340.95		Excess of Revenue over Expenditure for the Year	7,977.19	
Special Reprints	1,547.04				124,480.31
Trust Funds and Special Grants.	96.42				
Sundries	279.32				
		3,903.41			
Investments:					
At Book Value, Schedule No. 1	$100,236.17				
Accrued Interest	809.33				
		101,045.50			
Trust Funds—as per Schedule No. 2		35,020.15			
Special Grant Funds—as per Schedule No. 3.		16,842.33			
Furniture and Equipment—*Less* Depreciation.		825.91			
		$177,320.15			$177,320.15

38. AUDITORS' REPORT

Montreal, 25th March, 1943.

DR. F. S. PATCH,
Honorary Treasurer,
Canadian Medical Association,
3640 University Street, Montreal.

Dear Sir:—

We have audited the books and accounts of the Canadian Medical Association for the year ended 31st December 1942.

The receipts and disbursements of the General Secretary in Toronto, as shown on a statement certified to by Mr. Dignam as Auditor, have been incorporated in the books.

We verified the cash on hand and in bank and received confirmation of the securities which are held in safekeeping for Investment Account and for Trusts.

We found the books and accounts in good order and were given every assistance in the carrying out of our audit.

Subject to the foregoing remarks, we report that, in our opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Association's affairs, according to the best of our information and the explanations given to us and as shown by the books of the Association.

(Signed) McDONALD, CURRIE & Co.,
Chartered Accountants.

39. STATEMENT No. 2

STATEMENT OF REVENUE AND EXPENDITURE FOR YEAR ENDED 31ST DECEMBER, 1942

REVENUE		EXPENDITURE		
Membership Fees	$39,913.80	JOURNAL EXPENSES:		
Subscriptions	5,732.87	Printing	$29,905.41	
Advertising	39,759.95	Illustrations	787.40	
Special Reprints	1,016.17	Agents' Commissions	5,048.61	
Sundry Sales of *Journal*	409.41	Editorial Salaries	9,050.00	
Excess Revenue from Annual Meeting—as per Statement No. 3	17.60	Editorial Expenses	1,264.22	
Revenue from Investments and Bank Interest	3,563.23			$46,055.64
		ADMINISTRATION AND FINANCIAL EXPENSES:		
		General Expenses	$ 520.95	
		Unemployment Insurance	53.49	
		Travelling Expenses	7,552.44	
		Office Expenses—General Secretary	204.37	
		Postage	923.30	
		Salaries:		
		General Secretary's Office (including expense allowance) $16,190.53		
		Journal Office 4,410.20		
			20,600.73	
		Stationery and Printing	656.87	
		Telephone and Telegrams	773.83	
		Bad Debts	26.24	
		Discount and Exchange (Net)	262.83	
		Depreciation of Furniture and Equipment	91.77	
		Depreciation of Copies of History of C.M.A. still on hand	211.05	
		Royal Trust Fees	140.43	
		Cost of Living Bonus	1,080.14	
			33,098.44	
		Less: Recovered from Radio Broadcasting Account	1,052.78	
				32,045.66
		Code of Ethics—Questionnaires for Interns		141.80
		MEDICAL ECONOMICS:		
		Honorarium—Mr. Wolfenden	$ 500.00	
		Less—Sale of Medical Economics Books	12.00	
				488.00
		National Emergency Expenses—		
		General	90.86	
		Travelling	1,042.03	
				1,132.89
		Medical Secretaries' Conference—Travelling		137.30
		Health Insurance Committee		2,434.55
		Excess of Revenue over Expenditure for the Year —transferred to Surplus Account		7,977.19
	$90,413.03			$90,413.03

40. Statement No. 3

ANNUAL MEETING IN JASPER PARK, JUNE, 1942, STATEMENT OF REVENUE AND EXPENDITURE

Revenue		Expenditure		
Commercial Exhibits	$5,215.00	Expenses *re* Scientific and Commercial Exhibits	$ 693.86	
Bank Interest and Premium on U.S. Funds	42.87	Travelling Expenses	1,223.30	
		Salaries—General Secretary's Office	1,518.33	
		Printing:		
		Business Transactions:		
		Annual Meeting	$495.84	
		General	877.40	
			1,373.24	
		Registration Expenses	37.50	
		Auditors' Fee	10.00	
		Expense of Golf Tournament	43.21	
		General Expenses	212.68	
		Clerical Assistance	128.15	
				$5,240.27
		Excess of Revenue over Expenditure		17.60
	$5,257.87			$5,257.87

41. Schedule No. 1

SCHEDULE OF INVESTMENTS AS AT 31st DECEMBER, 1942

GENERAL FUND

	Par Value	*Book Value*
Dominion of Canada 3/54	$ 5,000.00	$ 5,000.00
Dominion of Canada 3/56	100.00	100.00
Dominion of Canada 3¼/49	5,000.00	4,825.00
Dominion of Canada 3/51	17,000.00	17,015.00
Dominion of Canada 3/52	10,000.00	9,875.00
Dominion of Canada 3¼/52	10,000.00	10,000.00
Dominion of Canada 5/55	1,000.00	985.00
Province of Alberta 4½/42	5,000.00	4,812.50
Province of British Columbia 4/57	5,000.00	4,775.00
Province of New Brunswick 3¾/49	5,000.00	4,862.50
Province of Nova Scotia 3/52	10,000.00	9,900.00
Province of Ontario 3/49	1,000.00	995.00
Province of Ontario 3/50	9,000.00	8,982.47
Province of Saskatchewan 4/54	1,000.00	900.00
Province of Saskatchewan 4½/60	3,000.00	2,835.00
City of Montreal 6/44	500.00	542.50
City of Montreal 4½/46	1,000.00	975.00
City of Montreal 4½/47	2,000.00	1,856.20
City of Montreal 5/54	5,000.00	5,050.00
Jewish Hospital Campaign Committee Inc., of Montreal 5/46	5,000.00	4,950.00
Ritz-Carlton Hotel Co. 1st Mortgage 5/42	1,000.00	1,000.00
	$101,600.00	$100,236.17

Approximate Market Value $100,492.13

42. TRUST FUNDS

Lister Club Fund:

Province of Quebec 4½/63	$1,000.00	$ 985.00
Dominion of Canada 3/56	5,500.00	5,500.00
	$6,500.00	$6,485.00

Approximate Market Value $6,582.15

Osler Memorial Fund:

Dominion of Canada 3½/49	$ 100.00	$ 96.50
Dominion of Canada 3/51	100.00	100.25
Dominion of Canada 3/55	2,000.00	1,970.00
Province of Alberta 4½/42	3,000.00	2,887.50
Dominion of Canada 3/54	500.00	501.25
	$5,700.00	$5,555.50

Approximate Market Value $5,046.27

Osler Scholarship Fund:

Dominion of Canada 3/51	$5,000.00	$5,000.00
Dominion of Canada 3/58	2,000.00	1,992.49
City of Montreal 5/43	5,000.00	5,187.50
Dominion of Canada 3/56	2,000.00	2,000.00
	$14,000.00	$14,179.99

Approximate Market Value $13,885.20

Blackader Lecture Fund:

Dominion of Canada 4½/46	$ 200.00	$ 195.00
Dominion of Canada 4½/57	200.00	204.00
Dominion of Canada 3/58	3,000.00	2,988.73
Province of Alberta 4½/56	1,000.00	1,000.30
City of Drummondville 4/56	500.00	517.50
City of Drummondville 4/62	100.00	103.50
Dominion of Canada 3/56	500.00	500.00
	$5,500.00	$5,509.03

Approximate Market Value $5,264.05

Cancer Fund:

Dominion of Canada 3/56	$10,000.00	$10,000.00

Approximate Market Value $9,962.50

NOTE.—The Association is holding the following Uncashed Coupons on Province of Alberta Bonds:—

General Fund	$1,017.88
Osler Memorial Fund	611.06
Blackader Lecture Fund	209.14

43. SCHEDULE No. 2

SCHEDULE OF TRUSTS AND TRUST FUNDS AS AT 31ST DECEMBER, 1942

			Trust Funds	*Trusts*
Lister Club Fund:				
Capital		$6,521.16		
Accumulated Revenue—1st January, 1942	$1,648.28			
Deficit for Year	*851.72*			
		796.56		$7,317.72
Represented by—				
Investments as per Schedule No. 1		$6,485.00		
Cash in Bank		832.72		
			$7,317.72	
Osler Memorial Fund:				
Capital		$5,566.51		
Accumulated Revenue—1st January, 1942	$ 76.15			
Deficit for Year	*123.28*			
		47.13		5,519.38
Represented by—				
Investments as per Schedule No. 1		$5,555.50		
Cash in Bank		8.88		
Accounts Receivable	$ 3.38			
Less—Accounts Payable	48.38			
		45.00	5,519.38	
Osler Scholarship Fund:				
Capital—1st January, 1942		$12,448.68		
Accumulated Revenue, 1st January, 1942	$2,131.07			
Revenue for Year	462.96			
		2,594.03		15,042.71
Represented by—				
Investments as per Schedule No. 1		$14,179.99		
Cash in Bank		862.72		
			15,042.71	
Blackader Lecture Fund:				
Capital—1st January, 1942		$5,458.73		
Accumulated Revenue, 1st January, 1942	$792.26			
Deficit for Year	*270.27*			
		521.99		5,980.72
Represented by—				
Investments as per Schedule No. 1		$5,509.03		
Cash in Bank		471.69		
			5,980.72	
Blackader Library of the Hospital Service Department:				
Balance—1st January, 1942		$1,040.35		
Bank Interest		5.03		
		$1,045.38		
Deduct—Expenses:				
Books and Literature		$90.36		955.02
Represented by—				
Cash in Bank		$960.70		
Less—Account Payable		5.68		
			955.02	
Canadian Radiological Society Library Fund:				
Balance—1st January, 1942		$235.10		
Bank Interest		1.09		
		$236.19		
Deduct—Expenditure for Books		31.59		204.60
Represented by—				
Cash in Bank			204.60	
			$35,020.15	$35,020.15

44. SCHEDULE No. 3

SCHEDULE OF SPECIAL GRANTS AND SPECIAL GRANT FUNDS AS AT 31ST DECEMBER, 1942

			Special Grant Funds	*Special Grants*
Department of Hospital Service:				
Balance at Credit, 1st January, 1942		$ 632.23		
Grant from Sun Life Assurance Company of Canada		11,000.00		
Bank Interest		4.22		
		$11,636.45		
Deduct—Cost of Living Bonus	$ 147.84			
Salaries (including expense allowance)	8,959.92			
Travelling Expenses	838.02			
Printing, Stationery, Literature and Office Supplies	456.26			
Postage	273.83			
Telephone and Telegrams	5.00			
General Expenses	29.29			
Unemployment Insurance	14.12			
Depreciation of Equipment	66.60			
		10,790.88		
Balance at Credit, 31st December, 1942				$ 845.57
Represented by—				
Cash in Bank	$288.50			
Less—Accounts Payable	42.36			
		$246.14		
Equipment—*Less* Depreciation		599.43		
			$845.57	
(Revenue $11,004.22, Expenditure $10,790.88, Excess Revenue for year $213.34.)				
Department of Publicity and Health Education:				
Balance at Credit, 1st January, 1942		$2,715.11		
Bank Interest		11.97		
		$2,727.08		
Deduct—Reprints	$ 21.60			
Travelling Expenses	170.34			
Depreciation of Equipment	27.21			
		219.15		
Balance at Credit, 31st December, 1942				2,507.93
Represented by—				
Cash in Bank		$2,263.01		
Equipment—*Less* Depreciation		244.92		
			2,507.93	
Post Graduate Department:				
Balance at Credit, 1st January, 1942		$142.72		
Deduct—Depreciation of Equipment		142.72		
Cancer Fund:				
Balance at Credit, 1st January, 1942		$ 9,491.35		
Grant from Board of Trustees of King George V Jubilee Cancer Fund for Canada		11,000.00		
Bank Interest		118.26		
		$20,609.61		
Deduct—Canadian Society for Control of Cancer	$7,000.00			
Travelling Expenses	162.88			
		7,162.88		
Balance at Credit, 31st December, 1942				13,446.73
Represented by—				
Cash in Bank		$ 446.73		
Accounts Receivable		3,000.00		
Investments		10,000.00		
			13,446.73	
(Revenue $11,118.26, Expenditure $7,162.88, Excess Revenue for year $3,955.38.)				
Committee on Nutrition:				
Balance at Credit, 1st January, 1942		$41.52		
Bank Interest		.58		
Balance at Credit, 31st December, 1942				42.10
Represented by—				
Cash in Bank			42.10	
			$16,842 33	$16,842.33

45. STATEMENT No. 1

CANCER FUND

BALANCE SHEET AS AT 31ST DECEMBER, 1942

ASSETS		LIABILITIES		
Cash in Bank	$ 446.73	SURPLUS ACCOUNT:		
Accounts Receivable	3,000.00	Balance at Credit—1st January, 1942	$9,491.35	
Investment in Dominion of Canada War Loan Bonds (Approximate Market Value $9,962.50)	10,000.00	*Add*—Excess Revenue for Year	3,955.38	
				$13,446.73
	$13,446.73			$13,446.73

AUDITORS' REPORT

We have audited the books and accounts of the Cancer Fund of the Canadian Medical Association for the year ended 31st December, 1942, and have obtained all the information and explanations which we have required.

We report that, in our opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Fund's affairs, as at 31st December, 1942, according to the best of our information and the explanations given to us and as shown by the books.

(Signed) McDONALD, CURRIE & Co.,
Chartered Accountants.

Montreal, 26th March, 1943.

STATEMENT No. 2

STATEMENT OF REVENUE AND EXPENDITURE FOR YEAR ENDED 31ST DECEMBER, 1942

REVENUE		EXPENDITURE		
Grant from Board of Trustees of King George V Jubilee Cancer Fund for Canada	$11,000.00	Canadian Society for Control of Cancer	$7,000.00	
Bank Interest	118.26	Travelling Expenses	162.88	
				$7,162.88
		Excess of Revenue over Expenditure for the Year—transferred to Surplus Account		3,955.38
	$11,118.26			$11,118.26

STATEMENT No. 3

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR YEAR ENDED 31ST DECEMBER, 1942

RECEIPTS			DISBURSEMENTS		
Balance of Cash in Bank, 1st January, 1942		$9,103.35	Canadian Society for Control of Cancer	$ 7,000.00	
Account Receivable for 1941	$ 388.00		Royal Trust Company—Dominion of Canada Bonds	10,000.00	
Grant from Board of Trustees of King George V Jubilee Cancer Fund for Canada	8,000.00		Travelling Expenses	162.88	
Bank Interest	118.26				
Total Receipts		8,506.26	Total Disbursements		$17,162.88
		$17,609.61	Balance of Cash in Bank, 31st December, 1942		$446.73

46. THE CANADIAN MEDICAL ASSOCIATION FUND IN SUPPORT OF THE WAR BENEVOLENT FUND OF THE BRITISH MEDICAL ASSOCIATION

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDED 31ST DECEMBER, 1942

RECEIPTS		DISBURSEMENTS	
CONTRIBUTIONS:		British Medical Association	$3,207.33
British Columbia Division	$ 755.18		
Quebec Division	60.00		
Victoria County Medical Association	80.00		
Northumberland and Durham County Medical Society	65.00		
Alberta Division	628.03		
Noonday Club of Western Ontario	25.00		
Caduceus Club, Toronto	100.00		
Peterborough Medical Society	156.03		
Toronto East Medical Association Sports Committee	27.00		
Ontario Medical Association	750.00		
Jewish General Hospital	51.00		
London Convention Committee Canadian Association of Radiologists	71.09		
Province of Saskatchewan	75.00		
North Eastern Saskatchewan District Medical Society	74.00		
Brant County Medical Association	50.00		
Tisdale Clinic, Tisdale, Saskatchewan	50.00		
Sundry	190.00		
	$3,207.33	Balance of Cash in Bank, 31st December, 1942	...

AUDITORS' REPORT

We have audited the books and accounts of the Canadian Medical Association Fund in Support of The War Benevolent Fund of the British Medical Association for the year ended 31st December, 1942, and we have obtained all the information and explanations which we have required.

We report that, in our opinion, the above Statement represents a correct summary of the Receipts and Disbursements for the year, according to the best of our information and the explanations given to us and as shown by the books of the Fund.

(Signed) McDONALD, CURRIE & Co.,
Chartered Accountants

Montreal, 26th March, 1943.

47. STATEMENT No. 1

DEPARTMENT OF HOSPITAL SERVICE

BALANCE SHEET AS AT 31ST DECEMBER, 1942

ASSETS			LIABILITIES		
Cash in Bank		$288.50	Accounts Payable		$ 42.36
EQUIPMENT:			SURPLUS:		
Balance, 1st January, 1942	$594.03		Balance at Credit, 1st January, 1942	$632.23	
Additions during year	72.00		*Deduct*—Excess Revenue for the Year	213.34	
	$666.03				845.57
Deduct—Depreciation for Year	66.60				
		599.43			
		$887.93			$887.93

AUDITORS' REPORT

We have audited the books and accounts of the Department of Hospital Service of the Canadian Medical Association for the year ended 31st December, 1942, and have obtained all the information and explanations which we have required.

We report that, in our opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Department's affairs, as at 31st December, 1942, according to the best of our information and the explanations given to us and as shown by the books.

(Signed) McDONALD, CURRIE & Co.,
Chartered Accountants.

Montreal, 26th March, 1943.

STATEMENT No. 2

STATEMENT OF REVENUE AND EXPENDITURE FOR YEAR ENDED 31st DECEMBER, 1942

REVENUE		EXPENDITURE	
Grant—Sun Life Assurance Co. of Canada	$11,000.00	Salaries (including Expense Allowance)	$8,959.92
Bank Interest	4.22	Cost of Living Bonus	147.84
		Travelling Expenses	838.02
		Stationery, Printing, Literature, etc	185.03
		SPECIAL BOOKLETS:	
		Municipal Doctor $ 41.04	
		Canadian Hospital Council 150.00	
		Hospitals Approved for Internship 41.58	
		Health Insurance 38.61	
			271.23
		Postage	273.83
		Telephone and Telegrams	5.00
		General Expenses	29.29
		Unemployment Insurance	14.12
		Depreciation of Equipment	66.60
			$10,790.88
		Excess Revenue for the Year—transferred to Surplus Account	213.34
	$11,004.22		$11,004.22

STATEMENT No. 3

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR YEAR ENDED 31st DECEMBER, 1942

RECEIPTS			DISBURSEMENTS		
Balance of Cash in Bank, 1st January, 1942		$ 210.14	Repayment of Loan from Canadian Medical Association Current Account		$ 1,000.00
Grant—Sun Life Assurance Co., of Canada	$11,000.00		Account Payable, 1941		196.94
Loan from Canadian Medical Association Current Account	1,000.00		Purchase of Office Equipment		72.00
Accounts Receivable, 1941	25.00		Salaries (including Expense Allowance)		8,959.92
Bank Interest	4.22		Cost of Living Bonus		147.84
			Travelling Expenses		838.02
Total Receipts		12,029.22	Stationery, Printing, Literature, etc		173.20
			SPECIAL BOOKLETS:		
			Municipal Doctor	$ 41.04	
			Hospitals Approved for Internship	41.58	
			Health Insurance	38.61	
			Canadian Hospital Council	150.00	
					271.23
			Postage		243.30
			Telephone and Telegrams		5.00
			General Expenses		29.29
			Unemployment Insurance		14.12
			Total Disbursements		$11,950.86
			Balance of Cash in Bank, 31st December, 1942		288.50
		$12,239.36			$12,239.36

REPORT OF THE EDITOR

Mr. Chairman and Members of General Council:—

I beg to report on the work of the *Journal* for the year 1942.

48. My term of office began on June 1, 1942, but I shall deal also with the 6-month period preceding that.

The *Journal* has been maintained at a steady level as regards the number of pages, and every effort has been made to keep up the standard of publication. The supply of material for the past year has been plentiful, but it is realized that the cancellation of the annual meeting for 1943 is going to have a serious effect on the material available in the future. Steps are being taken however to remedy this.

49. The overwhelming importance of Health Insurance has been fully recognized and priority is given to all material dealing with it. We have also made a point of the promptest possible publication of papers dealing with military medicine. With the co-operation of the various services we are able to publish periodically lists of medical officers in each branch. These have proved to be of practical value.

50. The demands of the war have brought about certain unavoidable changes in the quality of the paper available, but without any serious effect on the *Journal*.

51. A special Banting number was brought out in November in commemoration of the late Sir Frederick Banting. Efforts were made to collect material by his colleagues and workers associated with him, and the result was gratifying.

52. Under instructions of the Executive Committee a special *Overseas Bulletin* has been developed, to be sent to all Canadian Medical officers overseas. One number has already been prepared and others are being arranged for.

53. It is with the deepest regret that I have to report the death of Dr. Jabez Elliott, our Ontario correspondent. In his long association with the *Journal* he gave us of his best. His interest in the work was unwearying; his judgment was sound; his support was loyal. By his death the Association has lost a true friend. I am glad to say that we have been fortunate in having Dr. M. H. V. Cameron as his successor. Dr. Cameron is giving us most valuable assistance.

54. I should like to express to Dr. Nicholls my appreciation of his constant assistance and counsel. To our Divisional representatives also the *Journal* is continually indebted for most essential and generous support.

55. The work of the *Journal* depends so much on the co-operation of all the officers of the Association, that I must extend my thanks to them collectively for their continued help. To Mrs. Lang, the Assistant Managing Editor and her staff very high praise is due. Our printers, the Murray Printing Company are a source of the highest satisfaction not only in their prompt and efficient work but in their friendly and continued interest.

All of which is respectfully submitted.

H. E. MACDERMOT,
Editor.

Approved.

REPORT OF THE MANAGING EDITOR

Mr. Chairman and Members of General Council:—

I have the honour to submit the Annual Report of the Managing Editor.

56. With the January 1942 issue the cover of the *Journal* was changed by using a lighter grey stock, by printing in blue, and by the addition of a blue border line. These changes have added to the appearance of the *Journal*.

57. In 1942 the *Journal* was extremely fortunate in the volume and quality of its advertisements. While it was difficult to obtain new accounts from the United States due to customs and exchange regulations, there was a distinct increase from Canadian sources. The new rates which finally were in full operation contributed materially to the increase in advertising receipts.

58. The shortage of certain goods has not had an adverse effect on *Journal* advertising except in the case of some infant foods packed in tin containers. That our advertising has been maintained at a high level throughout the year was due to a general expansion in business and the fact that manufacturers are keeping postwar conditions in view.

All of which is respectfully submitted.

F. S. PATCH,
Managing Editor.

Approved.

REPORT OF THE COMMITTEE ON NUTRITION

Mr. Chairman and Members of General Council:—

59. Studies conducted on Air Force personnel by the Medical Branch of the Royal Canadian Air Force have shown that individual food likes and dislikes interfere greatly with the adequate nutrition of many of the personnel. For instance, on June 2nd, 1941, grapefruit juice was added to the ration of both the Army and the Air Force to furnish vitamin C in large amounts. Practically all the grapefruit juice coming into Canada is reserved for this purpose. Surveys of food habits, however, indicated that no less than one-third of the personnel either did not take grapefruit juice at all or took it only once a week. This is just one example of how food dislikes or indifference can interfere with adequate nutrition.

60. In order to inform the R.C.A.F. personnel as to just why certain foods were included in the ration, an educational programme on nutrition has been instituted in the R.C.A.F. One aspect of this programme is the production of a motion picture film in sound and colour, called "Training Table," which gives information on the nutritional value of the ration.

Your Committee on hearing of this motion picture, in conjunction with the Committee on Nutrition of the Life Insurance Companies in Canada, approached the Royal Canadian Air Force for permission to produce a booklet based on this film for distribution to the people of Canada. Permission was granted by Honourable C. G. Power, Minister of National Defence for Air, for this to be done, and a request was made by the Air Force for some 200,000 copies for distribution to Air Force personnel.

61. The booklet, called "What They Eat to be Fit," of some 16 pages in colours, is being distributed to both Air Force personnel and to the people of Canada, starting the first of May. The initial printing is approximately 1¼ million copies, and it is hoped to distribute one copy to every household in Canada. The booklet is being distributed under the joint auspices of the Canadian Medical Association and the Life Insurance Companies in Canada.

All of which is respectfully submitted.

FREDERICK F. TISDALL,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION

Mr. Chairman and Members of General Council:—

The Committee on Medical Education of the Canadian Medical Association begs to submit the following report.

Re INTERN EDUCATION

62. Because of the curtailment of the period of Internship to eight months, the Committee believes that special

efforts should be made by hospital staffs—particularly in non-teaching hospitals—to ensure that the Intern secures the maximum of practical instruction. The Committee, therefore, recommends as follows:

(1) That the Canadian Medical Association endeavour to have introduced in non-teaching hospitals, where Interns are employed, a systematic programme of practical instruction provided by the staff and that a special Committee on Intern Instruction be appointed to arrange such a programme which should include:—

(*a*) Regular Clinical Ward Rounds.

(*b*) A series of practical demonstrations of common procedures.

Approved.

Re MEDICAL COURSE

63. In view of the present urgent need for medical practitioners, both for military and civilian requirements, and because of the predicted post war shortage of doctors, the Committee recommends as follows in regard to the Medical course:

(1) That the present first year, which is entirely a pre-medical year, be standardized for all Medical Schools and that the student be permitted to take it at any recognized University or School where such work is available.

(2) That the course for general practitioners be shortened by making the final year (at present, a period of eight months) a purely clinical one to be taken as an undergraduate Internship in certain approved hospitals and that the license to practice be withheld until the completion of this period.

This change has been discussed for several years and has been adopted by several Medical Schools. The Committee believes that this shortening of the course with a compulsory Internship would not only be economical and time-saving but would help meet the present and future shortage of doctors. It would also turn out a more efficient and practical type of general practitioner. Any student wishing more Physiology, Anatomy, Pathology or Biochemistry for some special purpose could take this in a subsequent Post Graduate year.

Following discussion of this section of the report, it was duly moved, seconded and agreed that it be recommended to the Association of Medical Colleges and the Colleges of Physicians and Surgeons of the Provinces that consideration be given to the question of standardizing the pre-medical year, which would make it possible to take this year at any school where it is available.

It was also agreed that the suggestion *re* shortening of the course be referred to the Association of Medical Colleges and the Colleges of Physicians and Surgeons for consideration.

Re POST GRADUATE EDUCATION

64. Because of the expected post war need for Post Graduate refresher courses for men returning from military to civilian practice, the demand for which was considerable after the last war and which will undoubtedly be much greater when the present war is over, the Committee feels that the Canadian Medical Association should take some action to prepare to meet this need, and recommends as follows:

(1) That a survey of the facilities which would be available for Post Graduate instruction after the war be made with reference to:—

(*a*) Teaching hospitals.

(*b*) Non-teaching hospitals.

(*c*) Residencies available.

(*d*) Possibility of establishing refresher courses in various localities.

The Committee feels that a comprehensive plan of national scope should be prepared to meet this post war need.

It was agreed that this section be referred to the Post-war Rehabilitation Committee for consideration.

65. The Committee also recommends that the Canadian Medical Association be represented officially on any Committee or Group which may be concerned with changes in the Medical curriculum or post war Post Graduate Education which may be set up by the Federal Government or the Medical Schools.

All of which is respectfully submitted.

O. W. NIEMEIER,
Chairman.

Approved as amended.

REPORT OF THE DEPARTMENT OF HOSPITAL SERVICE

Mr. Chairman and Members of General Council:—

66. The past year has been one of considerable activity for the hospitals and for our Department of Hospital Service. The war has brought new problems and accentuated old ones and, with the solution of these, the Department has been much concerned.

67. The fourth year of the war has found the hospitals sadly lacking for accommodation. The average hospital occupancy has gone up 18.49 per cent during this period, yet the bed capacity has gone up but 10.4 per cent. This has meant considerable overcrowding for most of the year. The situation is worse in industrial areas due to the influx of workers and crowded housing conditions. Actually the greatest increase has been in the Maritimes, where in New Brunswick occupancy has gone up 31.6 per cent and in Nova Scotia it has risen to 42.2 per cent.

68. Construction has virtually stopped. That is unfortunate, for it will be needed badly if health insurance be enacted. Some construction has taken place, but with steel and labour both quite scarce, with most of the elaborate equipment, such as sterilizers, x-ray apparatus, centrifuges and laundry machinery, almost impossible to obtain and with costs up 35 or 40 per cent, most new construction has been postponed. The Controller of Construction has stated that the only construction which he now feels should be authorized is of a semi-permanent nature. Although not as desirable as the usual type of permanent fire-proof construction, it can be insulated and made thoroughly comfortable, will last for twenty-five years or more and can be put up for about half the usual cost of construction. The hospitals have been trying for a long time to have more of the military hospitals erected on civilian hospital grounds so that the buildings could be of continued use after the war, but with limited results.

69. Personnel problems have been most trying. Hospitals have suffered a tremendous turnover in personnel, partly due to enlistment but largely due to the lure of the abnormally high wages paid in government-aided war industry. One large hospital last year reported losing

187 employees in one month. Hospitals have raised wages considerably and shortened hours. Hospital employment now compares quite favourably with similar permanent employment but hospitals cannot match inflated temporary war-industry employment without making the charges to patients prohibitive. During the past year National Selective Service has been of much assistance by listing all female hospital employees and male employees in a wide list of hospital positions as on a par of essentiality with that of munition workers. While this has helped, personnel increase has not kept pace with occupancy and the situation has been aggravated by the lower degree of training or competency on the part of many who have filled vacated positions. It would appear that medical staffs are not likely to receive the old prewar standard of service until after the war. An effort is being made to obtain authorization for a special badge for those hospital employees holding essential positions.

70. Federal regulations and restrictions have made it more difficult for hospitals but, on the whole, general consideration has been given to their needs, as, for instance, in the case of rationing and priorities. Hospitals, too, have been permitted to raise their rates where financial statements would show such to be necessary. For such considerations the hospitals have been highly appreciative. Our office has been consulted frequently with respect to many of these items.

71. The internship problem is an increasingly acute one. With a fixed output of interns and with an increasing number of hospitals desiring interns and larger numbers of interns, the supply is far short of the demand. The situation is most acute in the non-teaching hospitals, particularly as some of the teaching hospitals would seem to be taking on more junior interns.

A solution for this difficulty must be found. To ask the busy staff man to do the work normally done by the intern is only practicable to a degree. To "ration" interns, now being demanded by many, can hardly be done, for internship is still a matter of individual preference in most schools; even if rationing be accepted, it would probably mean but distribution to a limited number of hospitals, mainly teaching hospitals, selected by the medical schools. Compulsory employment by all hospitals of a specified number of paid medical house officers would require an excessive number of doctors and, in many cases, would be a wasteful use of medical personnel. It was not a success in one state where it was adopted. In some hospitals with reduced intern staffs, the service has been reorganized by turning over much of the work to technicians, medical record librarians and nurse clinical assistants. For the hundreds of hospitals unable to obtain any, or sufficient, interns, we see no other solution, if adequate care is to be given, than to train and utilize non-medical personnel for many of the duties normally assigned to interns. A course of this nature was given at the University of Toronto in January.

72. The hospitals have taken part in the National Health Survey described elsewhere in these reports. This inventory of hospital personnel and facilities reveals that few employees of any type can be spared at the present time and that the number of beds available for emergency use is now much less than it was when a survey was made two years ago. Many valuable suggestions have been received with respect to post-war planning of hospital services.

73. Health insurance has been given much serious thought by hospital executives. Our Department has co-operated closely with the Canadian Hospital Council in formulating "Principles" and in the preparation of a Memorandum for presentation to the Special Committee on Social Security. We are pleased to note that many of the points deemed essential by both the medical profession and the hospitals are so closely identified.

74. We should refer also to the extensive correspondence with hospitals respecting their varied inquiries, to the various hospital conventions where assistance has been given in the programmes and to the reference library on hospital topics, the material in which has become quite a problem for our limited staff.

75. To the Sun Life Assurance Company of Canada we again extend our thanks for the generous support which has made the work of this Department possible.

All of which is respectfully submitted.

HARVEY AGNEW,
Secretary.

Approved.

REPORT OF THE COMMITTEE ON LABORATORY TECHNOLOGISTS

Mr. Chairman and Members of General Council:—

76. The Committee on Laboratory Technologists has been quite active during the past year and it seems probable that its interests will be extended as we pass from the war period to reconstruction. The technician, a term which we prefer to technologist, plays an important rôle in the chain of diagnosis and treatment of the sick as well as in the field of preventive medicine. His importance has steadily increased during the last forty years and his status has at the same time improved. Moreover women have taken an increasing part in this branch of medical work. With expanding usefulness the necessity of higher preliminary education and more elaborate training has developed. War conditions with the necessity of supplying hospital units with technical help has increased the demand for personnel. When peace comes, with the greater development of facilities for diagnosis and treatment, there may well be a sudden expansion of laboratory work and therefore of laboratory workers in all branches and in all grades. The transition from war to peace with the disbanding of laboratory workers who have been hastily trained to meet urgent needs will raise problems of maintaining standards of education and experience in this profession. The Committee has endeavoured to look ahead and anticipate some of the matters which will arise in the post-war period.

77. All of last year's committee agreed to serve under the new Chairman and we have since added two additional members, Doctor W. S. Lindsay of Saskatoon and Doctor H. H. Pitts of Vancouver, making the committee one that is really representative of the heads of Canadian laboratories.

78. In October last, at the instance of the former Chairman of this Committee (Dr. W. J. Deadman), a letter was drawn up and sent to the heads of the Armed Services calling attention to certain considerations:

1. Sources of laboratory workers for military purposes are three in number.
   (*a*) the existing technical staff of hospitals and research laboratories;
   (*b*) scientifically minded members of the forces, male or female, seconded for the purpose;
   (*c*) the general population, male and female, not as yet enlisted.
2. Standards already exist as regards a desirable minimum training for laboratory technicians; namely one year of specified instruction for the general certificate and a subsequent year of instruction in a special field for a specialty certificate.
3. The membership of the Canadian Society of Laboratory Technologists now constitutes a registry of trained technicians for the guidance of those seeking competent technicians.
4. A list of schools approved by the Committee for the training of technicians is available.
5. More extended courses are offered at universities such as Queen's, McMaster and the University of Saskatchewan.
6. As there is some risk of technicians partially trained under the pressure of war conditions flooding the market in the post-war period, it was suggested that it should be understood by such technicians that their partial training should

not be considered as fitting them, without further training, for a career as a technician in civil life.

In their replies to this letter Brigadier Meakins and Surgeon Captain McCallum expressed their interest in and appreciation of the work being done by the Committee and the Canadian Society of Laboratory Technologists and indicated that, as far as possible, they would observe the standards set up by these bodies. However, in view of the short term courses given for army personnel, especially in serology, some disquiet is felt by us concerning the future in this field when such partially trained persons will be demobilized with the label of "technician" attached to them.

79. At a meeting of the Committee held in February of this year, the question of the qualifications of laboratory technicians under health insurance came up for discussion. It was agreed that it would seem advisable that hospitals and other laboratories desiring to be recompensed through health insurance funds for laboratory services rendered might be required to give assurance that such work had been done by properly qualified technicians, or at least that the technical director of the laboratory possess a recognized diploma. The result of this discussion was the despatch of a letter by the Chairman to Doctor R. E. Wodehouse, Chairman of the Dominion Council of Health, drawing attention to the existence and activities of this Committee of the Canadian Medical Association and suggesting that some standard of qualification for laboratory technicians, particularly hospital technicians, should be included in the provincial regulations to accompany the model provincial act in the federal measure. This letter was submitted to Doctor J. J. Haegerty, Chairman of the Advisory Committee on Health Insurance, who replied that standard qualifications for laboratory technicians may be established by the Health Insurance Commission of a province following the adoption of health insurance as the Commission is empowered to make regulations under the proposed bill.

80. During the past year an ever increasing number of inquiries concerning "approved" schools for technicians have been received from prospective students. This interest has been intensified, in all probability, by the fact that a diploma from one of these schools is now, as from January 1943, a prerequisite of membership in the Canadian Society of Laboratory Technologists, the latter body acting as a Registry for the Canadian Medical Association. Two additional schools have recently been added to the list of those approved by this Committee, one at the Toronto General Hospital, and one at Hôpital Sainte-Justine in Montreal. The list now numbers twelve schools in all. It is hoped that more may be established, especially in the western provinces.

All of which is respectfully submitted.

JAMES MILLER,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON INDUSTRIAL MEDICINE

Mr. Chairman and Members of General Council:—

81. The nucleus of the Committee on Industrial Medicine held a number of meetings during the year and obtained opinions by correspondence with the other members. The following considerations have occupied their attention:

1. The statement of conditions covering activities in Industrial Medicine presented to Council last year and published in the *Canadian Medical Association Journal* was further distributed to physicians in industrial communities in reprint form.
2. Titles were drafted and contributors enlisted for the preparation of a small booklet on the procedure to be followed in developing and operating an industrial medical department when it was discovered that there was about to come off the press, a publication directed to the same purpose by the United States Public Health Service. It was decided that this activity should be postponed until it was determined how far the American publication meets local needs.
3. The Committee conducted a survey of industrial medical personnel in Canada for the Canadian Medical Procurement and Assignment Board and made a report of the findings.
4. A Report was prepared for the consideration of the Committee of Seven of the Association on industrial medicine in relation to health insurance.
5. This Report was the basis for the brief on this subject presented to the Select Committee on Social Security of the House of Commons.
6. In Ontario, the Committee arranged for a Refresher Course on Industrial Medicine for physicians engaged in this work under the auspices of the University of Toronto.
7. In Quebec, the Committee has prepared a detailed report covering the scope and methods of work on industrial medicine.
8. In British Columbia, the Committee has been instrumental in organizing a full-time medical service in the shipbuilding and aircraft industries.

All of which is respectfully submitted.

J. G. CUNNINGHAM,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON MATERNAL WELFARE

Mr. Chairman and Members of General Council:—

I beg to submit the following report for the Maternal Welfare Committee for the year 1942-43.

82. Final figures show the maternal death rate for the Dominion in 1941 to be 3.5 per thousand live births. In two provinces the rate was less than 3 per thousand live births and in only one was it greater than 4. In 1941, there were 893 maternal deaths in the Dominion—indicating that there is still room for great improvement in the field of obstetric care.

83. Your Committee is submitting a guiding minimum for prenatal care for your approval. It is hoped this guide will stimulate and improve the care given to expectant mothers throughout Canada.

84. It would appear that provincial maternal welfare committees are active and accomplishing more than ever before. This is as it should be, and each Division should receive all possible support from the Canadian Medical Association in their endeavours to improve obstetric care.

85. The shortage of medical care available in rural areas now is not likely to improve in the near future, and may seriously affect the maternal death rate for some time to come.

Prenatal Care

The following is considered the minimum supervision which the medical practitioner should give to the pregnant woman.

86. Prenatal care involves such instruction, supervision and care of the prospective mother as will insure, as far as possible, the successful termination of her pregnancy without harm to herself or her offspring.

87. Adequate prenatal care necessary for any individual case cannot be determined beforehand. However, a minimum of prenatal care necessary for all women who are pregnant can be outlined. This minimum should guide the medical profession, governing bodies and the public, in assuming their respective responsibilities in the care of prospective mothers. It should in no way replace adequate care when such care is possible.

88. Pregnant women should consult their medical attendant as soon as pregnancy is suspected in order that they may receive detailed instructions regarding their

health during pregnancy and examination sufficient to insure that the pregnancy continues without danger.

89. Two or more visits are necessary during the second trimester and at least one each month during the third trimester.

90. At the first visit a careful history should be obtained and recorded. This history should place particular emphasis on menstruation, previous illnesses, operations, pregnancies and confinements. Inquiries as to the patient's social status and mode of life should be made, and, if necessary, help from health authorities or social agencies secured for her. The principles relating to adequate diet, elimination, activities in and out of the home, exercise, fresh air, sunshine, clothing and sexual intercourse should be explained and stressed. Every effort should be made to gain the patient's confidence and thus remove any worry or fear that might interfere with good health. Emphasis should be placed upon the necessity of early notification of signs or symptoms indicative of abnormalities arising during pregnancy such as vaginal bleeding, the toxæmic symptoms, headaches, œdema, visual disturbances, rapid gain in weight or diminishing urinary output. The necessity of regular subsequent visits and examinations to insure her well being and the safety of her baby should be stressed.

91. Anything less than a complete physical examination either at the first or second visit is inadequate. In this examination particular attention should be given to the presence or absence of infections of the mouth, respiratory, urinary and generative tracts, to the condition of the thyroid gland, the cardio-vascular renal system, breasts, nipples and pelvic organs. Pelvic measurements of inlet and outlet, the contour and capacity of the pelvic cavity should be determined. If doubt exists a re-check should be made at a later date. Blood for a Wassermann test should be obtained at the time of the physical examination.

92. At each prenatal visit the patient's urine should be examined and her weight and blood pressure recorded. Hæmoglobin estimation should be done during the second and again in the third trimester. At each visit during the third trimester the presentation, position and condition of the fœtus should be determined as well as the existence of any disproportion.

93. A minimum of six prenatal visits, properly spaced, together with co-operation from the patient, should be attainable in most communities throughout Canada. With such care a properly instructed patient, living under conditions conducive to good health, and an alert, capable attendant, any abnormalities arising should be readily apparent to the patient, physician or both. These abnormalities must be met by closer supervision and appropriate treatment. When weather or distance makes the suggested visits difficult or impossible, much can be accomplished by telephone or exchange of letters. Very seldom need urine examinations be neglected or danger signals pass unnoticed.

94. Many of the hazards now encountered during pregnancy and parturition will be obviated when certificates of good health for both participants become compulsory before legal marriage can take place. Such certification should be fostered and encouraged by members of the medical profession.

All of which is respectfully submitted.

J. D. McQUEEN,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON PHARMACY

Mr. Chairman and Members of General Council:—

95. The Executive has referred no business to the Committee this year. It may interest the members of the Council to know that the Canadian Committee on Pharmacopœial Standards, which Council discussed last year, has been formed, the medical members being D. Sclater Lewis, J. Alfred Mousseau, R. A. Farquharson and V. E. Henderson. The first meeting advised in regard to measures to rectify the situation arising from the Wartime Addenda to the B.P. and the first action by the Government to do so has been taken. There is great promise that this Committee will do important work.

All of which is respectfully submitted.

VELYIEN E. HENDERSON,
Chairman.

Approved.

Following discussion of this report, it was duly moved, seconded and agreed that the Committee on Pharmacy be charged with the responsibility of studying and preparing for approval a formulary such as would be useful in dispensing under national health insurance.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH

Mr. Chairman and Members of General Council:—

The Committee on Public Health begs to submit the following report.

96. Your Committee would again urge the vital importance of maintaining preventive health services in Canada at the highest possible level of efficiency. It is a matter of vital concern that there be no curtailment of any essential preventive health services, whether municipal, provincial or federal, in order to maintain the physical and mental fitness of the civilian population and His Majesty's Forces.

97. Your Committee desires to urge the need for closer co-operation between local health authorities and the Armed Services in connection with the control of communicable diseases. The prompt reporting of communicable diseases to local health officers, and the forwarding of information by local health authorities to local military authorities is essential in the interests of the health of the Armed Forces and the civilian population.

98. Your Committee is of the opinion that medical and public health personnel in Canada should be placed under national direction and control for the duration of the war, in order that the remaining personnel in the field of public health may be properly distributed and effectively used to safeguard the health of the civilian population and the Armed Forces. Your Committee is of the opinion that some arrangement should be worked out by which certain medical personnel of the Armed Forces might be granted leave of absence for certain defined periods to permit of such personnel rendering service in civilian communities in which no local medical service is now available. Under such a plan such doctors and nurses might be permitted temporary leave subject to a 24-hour notice to return to military duty if and when needed. This would make the services of such men promptly available to the army when needed and would do much to safeguard the health of the civilian population under war emergency conditions.

99. Your Committee is pleased to note that action has been taken by the federal authorities in connection with the prevention and control of venereal diseases among both civilian population and the Armed Forces, to which reference was made in our report last year. Through the appointment of a Director of Venereal Disease Control, who is to direct this activity both for the Armed Forces and for the Federal Department of Pensions and National Health, the means is provided for the close co-ordination of the military and civilian venereal disease control services. Under the able direction of Lt. Colonel D. H. Williams, and with the close co-operation of military and civilian authorities, we may look forward with

confidence to the results which will be achieved in this field.

100. Your Committee has learned with much satisfaction that routine serodiagnostic blood testing has been adopted as an official policy by the Canadian Army, and that facilities are being provided for a blood test for syphilis and that such test will be taken on all recruits after enlistment and before receiving protective inoculation and vaccination wherever the facilities for such test are or may become available. Reference was made in previous reports of the Committee to the vital importance of this procedure (which has been in effect in so far as the Air Force is concerned for some 18 months) being put into effect for the Army and Navy. The Venereal Disease problem is one of the most serious public health problems with which we are called on to deal, and the manner in which we deal with it will determine to a very large extent not only the efficiency of our war effort, but also the health of our civilian population for years after the war. Your Committee would recommend that a National Conference on Venereal Disease Control, organized on a similar basis to the Western Canada Conference on Venereal Disease Control which was held in Edmonton on October 8th and 9th, 1942, be held annually in order to provide the opportunity for exchange of information between civilian and military authorities and to ensure the close co-operation of all agencies concerned with the control of venereal disease in Canada.

101. Your Committee presents for your consideration the following resolution:

> WHEREAS published reports indicate an increasing prevalence of venereal disease in the armed forces and defence workers of this nation; and
>
> WHEREAS commercialized prostitution constitutes an outstanding factor in the dissemination of these diseases and requires an intensified campaign against their elimination;
>
> THEREFORE, BE IT RESOLVED that the Canadian Medical Association take the following stand:
>
> (1) That the control of venereal disease requires elimination of commercialized prostitution;
>
> (2) That medical inspection of prostitutes is untrustworthy and inefficient, gives a false sense of security and fails to prevent the spread of infection; and
>
> (3) That prostitution is unlawful, and physicians who knowingly examine prostitutes for the purpose of providing them with medical certificates to be used in soliciting are participating in an illegal activity and are violating the principles of accepted professional ethics.

102. Your Committee is completely in accord with the provisions of this resolution and recommends its adoption. It is inconceivable that any reputable physician should so degrade his profession and himself as to issue certificates to prostitutes to the effect that they are free from venereal disease. This is a baneful practice which encourages the maintenance of vice and may do incalculable damage by giving false assurance of safety and lead to an appreciable increase in venereal disease. Moreover, it tends to nullify the efforts of the duly constituted authorities, federal, state and local, to deal with the problems of prostitution by law enforcement and other accepted methods.

103. In view of the extent to which preparations containing bromides are prescribed, and in view of the large and dangerous doses of such preparations prescribed by many physicians, your Committee is of the opinion that this matter is of such importance as to warrant its being called to the attention of the medical profession in Canada, by the Canadian Medical Association. Patients are frequently admitted to hospitals and mental institutions in Canada with a very high and dangerous blood bromide concentration.

104. Your Committee again urges that the housing problem be given the serious consideration which the emergency of the present housing situation in Canada demands. If we expect to deal adequately and effectively with the serious housing problem we have in Canada, it is high time that a national policy of housing should be instituted. While under wartime conditions this problem is one of the most serious consequence from the standpoint of public health, we will be faced with an even more serious housing situation in Canada after the war.

105. Your Committee desires to emphasize, in connection with the question of Health Insurance in Canada, the vital importance of adequate provision for preventive health services being included in any health insurance scheme which is put into effect.

All of which is respectfully submitted.

MALCOLM R. BOW,
Chairman.

This report was received and is still being studied.

REPORT OF THE COMMITTEE ON ECONOMICS AND THE COMMITTEE OF SEVEN

Mr. Chairman and Members of General Council:—

The report of these two Committees is being presented as a joint report in as much as both have been concerned with the subject of health insurance during the past year and their activities have been so inter-related that it would be difficult to make two separate reports.

106. During the October meeting of the Executive Committee it was learned that the draft measure on health insurance under preparation at Ottawa was about to be completed for submission within a few weeks to the Minister and possibly to the Cabinet. It was indicated that if the medical profession desired to make representations respecting the measure such should be done without delay. Accordingly, the Nucleus of the Committee on Economics, with the assistance of the President and other Association officers, prepared a memorandum and questionnaire for the consideration of the respective Divisional Committees on Economics. This memorandum dealt with various aspects of health insurance and conveyed such details as could be discussed in view of the request of the Department that the nature of the draft be considered as confidential. The Deans of the various Medical Colleges, the Royal College of Physicians and Surgeons of Canada and the Canadian Public Health Association were consulted respecting details in their various fields.

107. Every Divisional Committee submitted its replies to the questionnaire by the first of December. This co-operation is deeply appreciated. With the assistance obtained from these Committees and other sources it was possible for the Committee on Economics to obtain a reasonably clear indication of the desires of the medical profession.

108. Early in December the Committee on Economics submitted a summary of the data obtained to the Committee of Seven for its information and guidance. On December 7th, representatives of the Canadian Public Health Association met with the Committee of Seven to consider desirable relationships between the general practitioner and the public health program under health insurance. A further discussion took place ten days later in Winnipeg when the President and General Secretary attended the meeting of the Deputy Ministers of Health. In essence, the suggestion by Dr. J. T. Phair, the Secretary of the Canadian Public Health Association, was that in the beginning the practitioner might undertake pre- and post-natal supervision during infancy and the pre-school period. Immunizing procedures should be carried out. A prerequisite to admission to school should be a statement respecting the child's physical condition in required detail. There should be a pre-

employment examination and certificate. Later there might be added pre-marital examination, periodic examination of the healthy adult, regular supervision of the child during the primary and secondary school period. Related factors such as training in this work and supervision, records, basis of payment, etc., were considered in detail. Adequate payment was agreed to be essential.

Conference with Drafting Committee

109. On December 11th and 12th the Committee of Seven presented a series of recommendations based on the Divisional replies and other information to the Drafting Committee—Dr. J. J. Heagerty, Mr. A. D. Watson and Mr. W. G. Gunn. It was evident that there was a strong desire on the part of the Drafting Committee to work out a measure which would be practicable, and acceptable and fair to all parties concerned, including the medical profession. Much discussion took place relative to the nature of the federal administration and of its oversight of the provincial plans. Other points discussed were the nature of the provincial commissions, the nature and extent of federal subsidies, registration under the Act, method of payment, certification of specialists, medical teaching, recognition of clinics, cash benefits, research, transients, hospitalization, upper income levels, inclusion of dependents, regulations to supplement the Act, costs, reserves for epidemics, etc. The Association was asked to submit at an early date a draft of the regulations which would apply to the medical details of the measure.

Special Meeting of General Council

110. The subject of health insurance is of such importance and developments at Ottawa were proceeding so rapidly that the President decided to call a special meeting of General Council on January 18th and 19th. This was a unique occasion in that it was the first time that General Council had ever been called between annual meetings. The major portion of the program was devoted to health insurance and it is worthy of note that this body, representative of all phases of medical work across Canada, 73 in number, voted in favour of the principle of health insurance without a single dissenting voice. This vote was on the *principle* and not upon the particular draft under discussion. The resolution is as follows:

> WHEREAS the objects of the Canadian Medical Association are:
>
> 1. The promotion of health and the prevention of disease;
> 2. The improvement of health services;
> 3. The performance of such other lawful things as are incidental or conducive to the welfare of the public;
>
> WHEREAS the Canadian Medical Association is keenly conscious of the desirability of providing adequate health services to all the people of Canada;
>
> WHEREAS the Canadian Medical Association has for many years been studying plans for the securing of such health services;
>
> THEREFORE be it resolved that:
>
> 1. The Canadian Medical Association approves the adoption of the principle of health insurance;
> 2. The Canadian Medical Association favours a plan of health insurance which will secure the development and provision of the highest standard of health services, preventive and curative, if such plan be fair both to the insured and to all those rendering the services.

Subsequent to the passing of this resolution the Council discussed at length those aspects of health insurance which would have a direct bearing on the provision of medical care.

Special Committee on Social Security

111. Subsequent to the calling of Parliament towards the end of January, the setting up of a Special Committee on Social Security to consider the draft measure was announced. This Committee, under the Chairmanship of the Honourable Cyrus Macmillan, has met regularly since its first session on March 16th. One of the first organizations to be heard was the Canadian Medical Association which presented its memorandum on April 6th, the President and General Secretary being the spokesmen, supported by Dr. D. Sclater Lewis, Dr. Charles Vezina, Dr. Léon Gérin-Lajoie and Dr. C. J. Veniot. This memorandum has already been distributed to the profession in pamphlet form. (Further copies are available if desired.) On this occasion health insurance was discussed from the viewpoint of broad principles rather than of detail. The representatives received an excellent reception. On May 7th Dr. William J. Boyd, Chairman of the Department of Cancer Control, presented a memorandum dealing with cancer control. On May 11th Dr. J. G. Cunningham, Chairman of the Committee on Industrial Medicine, presented a memorandum on that subject. Other organizations closely related in their work to the medical profession, such as the Canadian Hospital Council, the Dominion Council of Health, the Canadian Nurses Association and the Canadian Dental Association, also presented memoranda dealing with their respective fields.

112. Subsequent to the presentation of the memorandum to the Special Committee the Committee of Seven has been quite active in going over the draft measure and a number of suggestions whereby the sections and clauses could be improved have been submitted to the Drafting Committee and to the Special Committee. In this study of the measure the Committee of Seven has been greatly assisted by the helpful advice of the Association's Solicitor, Mr. Arthur L. Fleming, K.C. At the time of going to press the Special Committee was still holding hearings with various bodies desirous of making representations and had not yet prepared a final revision of the measure for presentation to the House. The Chairman of the Committee on Economics and the Chairman of the Committee of Seven desire to express their deep appreciation of the valuable and continued assistance rendered by the members of the two Committees.

All of which is respectfully submitted.

HARRIS McPHEDRAN,
Chairman, Committee on Economics

T. H. LEGGETT,
Chairman, Committee of Seven.

Approved.

Some time was spent in discussing the Departmental Proposals for a plan of health insurance and the comments on same prepared by the Committee of Seven. All suggestions and amendments made by General Council were then passed to the Committee of Seven for presentation to the Advisory Committee on Health Insurance.

The following points arising from the discussion should be noted.

1. *Re Fee Structure.* It was agreed that the Committee on Economics should be instructed to go into the whole question of remuneration of doctors throughout Canada.

2. *Re Assistance to the Provinces.* It was agreed that the Association grant all possible assistance to Provincial Divisions in connection

with any provincial movement to implement Dominion Health Insurance legislation.

3. *Re Health Insurance Information for Doctors in Military Service.* It was agreed that the Executive Committee should use all reasonable means to acquaint doctors in the Armed Services with what is being done in connection with health insurance legislation and to invite their comments with regard thereto.

REPORT OF THE COMMITTEE ON LEGISLATION

Mr. Chairman and Members of General Council:—

The Committee on Legislation was confronted this year with the greatest problem ever presented to Canadian Medicine—the health insurance proposals which are being studied by a special committee.

It has been the custom to have on the Committee on Legislation eight or ten Members of Parliament at Ottawa. This year, because of the extraordinary circumstances, it was decided that the Committee be composed of all the doctors (20) who are members of the Senate or House of Commons.

I need hardly mention that the medical profession will be confronted with serious opposition when the Bill is presented to the House of Commons.

Several meetings of the Committee have been held throughout the year, attended also by members of the Executive Committee of the Canadian Medical Association, the object of such gatherings being to acquaint the members of the Committee on Legislation with all the implications of the health insurance measure as far as the medical profession is concerned, and to organize our forces in such a way as to protect the interests of the profession.

It is impossible at the present time to state whether the health insurance bill will be presented to the House of Commons at an early session. The Minister of Pensions and National Health is desirous of having it presented before the close of the session if possible. Whenever it is presented, the Canadian Medical Association will stand as one solid body in the interests of the medical profession.

All of which is respectfully submitted.

C. J. VENIOT,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON CONSTITUTION AND BY-LAWS

Mr. Chairman and Members of General Council:—

113. Your Committee on Constitution and By-Laws has met twice to discuss matters brought before it. Of these the most important was the instruction from the Executive Committee that the By-Laws be revised to permit the immediate Past-President to be a member of the Executive. The Committee has drafted the necessary revision and has published it in two numbers of the *Journal* as is required by the Constitution. The proposed revision is as follows:

A—*Chapter VIII, Section 4, paragraph 2*

The President, the President-Elect, the Chairman of the General Council, the Honorary-Treasurer, the General Secretary, the Editor and the Managing Editor shall be members *ex-officio* of the Executive Committee, but only the elective officers shall have the right to vote.

It is proposed that this section be revised to read:

The President, the President-Elect, the immediate Past-President, the Chairman of General Council, etc.

B—*Chapter VII, Duties of Officers*

It is proposed that, after Section 2, a new Section be inserted to read as follows:

Section 3—Duties of the Immediate Past-President

He shall be a member *ex-officio* of the Executive Committee for the year immediately succeeding the termination of his Presidency.

Renumber the succeeding paragraphs, starting with Section 4, Duties of Chairman of General Council. Add to the end of Section 1—Duties of the President, the following sentence.

He shall be a member *ex-officio* of the Executive Committee for the year immediately succeeding his Presidency.

C—*Chapter VI, Section 2, Paragraph 4(2)*

Each Division's official nomination of one alternate who will act in the absence by reason of death or illness or from cause acceptable to the President, of the member or one of the members representing that Division.

It is proposed that, after the word "members" in the fourth line, the following words be inserted:

"of the Executive Committee".

114. The Committee on Constitution and By-Laws desires instruction from General Council regarding the status of Departments of the Canadian Medical Association and particularly the status of the Department of Cancer Control. This is a most important body with Executive power and considerable funds at its disposal doing important and useful work for which no provision exists in the Constitution and By-Laws. Moreover, the Managing Director of this Department has no constitutional right to a seat on Council or on the Executive Committee. Council should reach a decision as to how it wishes this important problem handled.

All of which is respectfully submitted.

R. I. HARRIS,
Chairman.

Approved.

The Chairman of the Committee on Constitution and By-Laws called attention to the fact that, under the present Constitution and By-Laws there is no provision for representation of Departments of the Association on General Council. This matter will receive study.

Pasteurization of Milk

General Council went on record as in favour of pasteurization of milk and a resolution was passed to the effect that the Federal and Provincial Governments be urged to see that pasteurization of milk is carried out throughout Canada.

Expression of Appreciation to the Chairman, Dr. T. H. Leggett

General Council went on record as expressing its sincere appreciation to the Chairman, Dr. T. H. Leggett, for the efficiency and understanding with which he has handled meetings of General Council and the Executive Committee, and carried on the business of the Association for the past five years.

OFFICERS

The following are the officers of the Association for the ensuing year:

President—Dr. D. Sclater Lewis, Montreal, Que.

President-Elect—Dr. Harris McPhedran, Toronto, Ont.

Chairman of General Council and of the Executive Committee—Dr. A. E. Archer, Lamont, Alta.

Honorary Treasurer and Managing Editor—Dr. F. S. Patch, Montreal, Que.

General Secretary—Dr. T. C. Routley, Toronto, Ont.

Editor—Dr. H. E. MacDermot, Montreal, Que.

Consulting Editor—Dr. A. G. Nicholls, Montreal, Que.

Associate Secretary—Dr. G. Harvey Agnew, Toronto, Ont.

DIVISIONAL REPRESENTATIVES ON THE EXECUTIVE COMMITTEE

British Columbia—Dr. A. H. Spohn, Vancouver, B.C.
Alternate—Dr. P. A. C. Cousland, Victoria, B.C.

Alberta—Dr. F. T. Campbell, Calgary, Alta.
Alternate—Dr. J. W. Scott, Edmonton, Alta.

Saskatchewan—Dr. O. E. Rothwell, Regina, Sask.
Alternate—Dr. A. C. Scott, Indian Head, Sask.

Manitoba—Dr. F. G. McGuinness, Winnipeg, Man.
Alternate—Dr. H. D. Kitchen, Winnipeg, Man.

Ontario—Dr. F. A. Brockenshire, Windsor, Ont.
Dr. H. M. Yelland, Peterborough, Ont.
Dr. H. M. Torrington, Sudbury, Ont.
Alternate—Dr. C. J. Devins, Aurora, Ont.

Quebec—Dr. Léon Gérin-Lajoie, Montreal, Que.
Dr. A. W. Young, Montreal, Que.
Dr. W. H. Delaney, Quebec, Que.
Alternate—Dr. E. S. Mills, Montreal, Que.

New Brunswick—Dr. A. F. VanWart, Fredericton, N.B.
Alternate—Dr. C. J. Veniot, Bathurst, N.B.

Nova Scotia—Dr. H. K. MacDonald, Halifax, N.S.
Alternate—Dr. J. G. Lynch, Sydney, N.S.

Prince Edward Island—Dr. W. J. P. MacMillan, Charlottetown, P.E.I.
Alternate—Dr. J. F. MacNeill, Summerside, P.E.I.

CHAIRMEN OF COMMITTEES

Archives—Dr. H. E. MacDermot, Montreal.

Awards, Scholarships and Lectures—Dr. Duncan Graham, Toronto.

Central Program—Dr. Duncan Graham, Toronto.

Constitution and By-Laws—Dr. R. I. Harris, Toronto.

Credentials and Ethics—Dr. Ross Mitchell, Winnipeg.

Advisory Committee to the Department of Hospital Service—Dr. W. H. Delaney, Quebec

Cancer Study Committee—Dr. J. S. McEachern, Calgary.

Department of Cancer Control—Dr. William Boyd, Toronto.

Economics—Dr. Harris McPhedran, Toronto.

Committee of Seven—Dr. A. E. Archer, Lamont.

Epidemics—Dr. T. H. Leggett, Ottawa.

Advisory Committee on Finance—Dr. Frank S. Patch, Montreal.

Hospital Internships—Dr. A. K. Haywood, Vancouver.

Industrial Medicine—Dr. J. G. Cunningham, Toronto.

Laboratory Technologists—Dr. James Miller, Kingston.

Legislation—Dr. C. J. Veniot, Bathurst.

Maternal Welfare—Dr. J. D. McQueen, Winnipeg.

Membership—Dr. H. D. Kitchen, Winnipeg.

Medical Education—Dr. O. W. Niemeier, Hamilton.

Meyers Memorial—Dr. George Boyer, Toronto.

Nutrition—Dr. F. F. Tisdall, Toronto.

Pharmacy—Dr. V. E. Henderson, Toronto.

Post Graduate—Dr. Duncan Graham, Toronto.

Public Health—Dr. Frank G. Pedley, Montreal.

All of which is respectfully submitted.

T. C. ROUTLEY,
General Secretary.